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The introduction of this report summarizes the laboratory's functions, competencies, and purpose: "to work with all interested organizations, institutions, and agencies in improving the quality of education by applying the results of scientific knowledge and technological development to classroom practice." The three major report sections contain rationale, objectives, research base, long-range plans, and accomplishments to date of the laboratory's three major programs: Program 100, which has developed instructional systems to assist teachers in learning process skills found to be related to the production of desirable learner outcomes; Program 200, which emphasizes instructional systems to assist those involved in intercultural programs (in metropolitan cities and among Indians, Alaskan natives, and migrants) to collaborate, assess needs, and plan effectively; Program 400, which is developing self-instructional systems in content areas to improve instruction in small schools. Included are sections on the activity phases, outline for dissemination strategy, and partial system analysis of Program 100 and on the 1968-74 work schedule with detailed work plans for Program 400. Shorter descriptions and plans are presented for three special projects: Relevant Educational Applications of Computer Technology (REACT); Individually Prescribed Instruction (IPI); and Information for Urban Educational Planning. (JS)

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PURPOSE AND POTENTIALS

ANNUAL REPORT
to the United States
Office of Education

September 15, 1968

PART ONE
BASIC PROGRAM PLANS

Northwest Regional Educational Laboratory

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SP002105

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September 15, 1968

Division of Laboratories and Research Development
Bureau of Research
United State Office of Education
Washington, D. C. 20202

Gentlemen:

Attached is part one of the September 15, 1968 annual report of the Northwest Regional Educational Laboratory. This is the Laboratory's Basic Program Plan.

Part two of this report is titled Contractor's Request. That part presents the Laboratory's request for funds for operating from December 1, 1968 to November 30, 1969.

Part three of this report is titled Index of Documents and Products. That part is comprised of documents detailing research on which Laboratory programs are based and results of Laboratory work.

All three parts of this report embody systematic efforts to focus the resources and potentials of the five-state region on means of providing educational opportunities and alternatives commensurate with the aspirations and abilities of the region's youth.

We look forward to pursuit of the plans presented here.

Sincerely,

Lawrence D. Fish

Lawrence D. Fish
Executive Director

George B. Brain

George B. Brain, Chairman
Board of Directors

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PREFACE

This report embodies development of purpose, accomplishment and forward planning.

From its inception the Northwest Regional Educational Laboratory has planned its work in collaboration with the region's local school systems, State Departments of Education and teacher training institutions. For more than two years the Laboratory has been aided by insights and work of the region's professional and civic organizations.

Together we are improving the education of Northwest children.

Together we are planning a continued advance toward schools that enable more youth to fulfill their potentials.

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PART I

DEVELOPMENT DIVISION PROGRAMS

PART I

DEVELOPMENT DIVISION PROGRAMS

The Development Division has been assigned the responsibility for organizing programs that enable the Laboratory to fulfill its stated purpose. This purpose is "to work with all interested organizations, institutions and agencies in improving the quality of education by applying the results of scientific knowledge and technological development to classroom practice."

The developmental program focus of the Laboratory is "Developing Instructional Systems for Improving Teaching-Learning Effectiveness." The efforts of the Development Division during fiscal year 1968 have been directed toward implementing this program focus.

The following functional processes have been identified: (a) sensing, (b) designing, (c) planning, (d) implementing, (e) coordinating, (f) monitoring, (g) evaluating, and (h) revising.

The Division has identified a number of useful roles which it plans to carry out: (1) advocate, (2) neutral catalyst, (3) trainer, (4) research utilization, (5) consultation, (6) evaluation design, (7) demonstration-communication, (8) instructional designer, (9) instructional engineer.

The Division has the responsibility for clarifying the objectives of the programs and strategies for pursuing them. It determines approximate inputs of time, talent and other resources required for goal attainment.

Progress is apparent in NWREL's efforts to close the gap between discovery of knowledge and invention of techniques and their widespread use in education.

Program teams have worked toward internal consistency in program plans.

Short-range and long-range (5 to 10 years) plans and cost estimates have been developed for all Laboratory programs.

The application of systems technology to education is being emphasized in all programs. Program 100 has developed instructional systems to assist teachers in learning process skills found to be related to the production of desirable learner outcomes. Program 200 emphasizes instructional systems to assist those involved in intercultural projects to collaborate, assess needs and plan more effectively. Program 400 is developing self-instructional systems in content areas.

R D & D Process

Work in the development area of the Research, Development and Dissemination process is the primary responsibility of the Laboratory. Understanding of this process is essential for the transmittal of scientific knowledge to the practitioner.

A goal of the Laboratory is to bring about better understanding of the R D & D process. Two strategies are presently being employed to attain this goal. One is to involve large numbers of regional educators in Laboratory work to provide examples of behaviors that contribute to the R D & D process. The expertise of the staff will increase with training and experience. The second means is through direct instruction in the R D & D process and the development of two instructional systems. One system is to develop the appropriate behaviors, and the other system is to prepare the instructional leaders essential to manage the first.

Program 200 operates on the principle that the education of all people is a total community responsibility. Its objectives are to utilize facts and experience gained from two years of work to develop instructional systems designed to help educators and other people who work with interrelated agencies acquire and use three types of capabilities essential for joint planning. This includes capabilities for:

Collaboration in interdependent effort

Assessment of needs to be met by cooperative effort

Cooperative planning of joint efforts to meet needs

The primary intent of this effort is to generate capabilities and attitudes essential for concentrated effort to improve schooling.

An individually prescribed instructional program for all learners is in the early stage of development.

Individually prescribed preparation of personnel for positions in the education process has also been conceptualized and is in the early stages of development.

New roles in the educational enterprises of the future are predicted. Activities are being developed to prepare educators to assume these roles.

Linkage between the developers and practitioners is a basic consideration of program development. Cooperative, collaborative procedures, accompanied by appropriate linkages to the Laboratory, are being developed with agencies in the region to assure that Laboratory products will be available to all people in the region.

Summary of Developmental Competencies

A variety of competencies are needed to implement related phases of the developmental process. Nineteen such competencies have been identified. All are not needed by all staff members in the Development Division, but access to them is essential.

1. Competency is needed in forecasting alternative futures and deriving contrasting implications from competing alternatives.

2. Expertise is needed in the content of procedural functions, e.g., the "moves" of inquiry, for which leadership training is being developed.

3. Competency is needed in utilizing research. This includes retrieval, formulating generalizations and deriving implications for cognitive learning within instructional systems, providing guidelines for identifying priorities, diagnosing developmental issues, constructing alternatives in the instructional systems, assessing progress and determining issues relative to dissemination.

4. Instructional leadership competency is needed during phases of exploration and field testing for developing components of instructional systems.

5. Competency in the procedures of systems technology is needed.

6. Competency in specifying intentions and expectations via such means as PERT charts and critical flow charts is needed for communication and coordination of efforts.

7. Competency is needed in the area of process training. Such "here and now" process learning is powerful and complex and it represents its own critical area of expertise.

8. Competency and orientation toward personalizing the involvement of learners in what is being learned are needed. This is especially evident in the process of creating the confrontations which heighten the learners' personal involvement.

9. Competency and awareness are needed in the area of developing relationships which provide interpersonal support for learning. The feedback needed in learning many procedural skills demands that attention be given to creating growth-oriented mutual help

relations. The economy obtainable for mass dissemination of these competencies by having a system of learners trained in helping each other makes these competencies an essential inclusion in development of instructional systems.

10. Competencies related to social engineering are needed so that the instructional systems which are created will be conceived in the context of their impact on the social systems in which they will be applied. New processes applied by teachers will need to be supported by appropriate corresponding capabilities of administrative practice.

11. Competencies of information management are needed for incorporation into finished instructional systems.

12. Writing capabilities are needed to communicate with various target groups.

13. Competencies in writing programed instruction materials are needed.

14. Competencies are needed in the development of audiovisual materials and devices. Purposeful applications of these materials may add significant meaningfulness to learning.

15. Competencies are needed in interpersonal relationships necessary for effective teamwork. The range of competencies necessary for developmental work is so broad that teamwork becomes a necessity. Flexibility of movement among changing team personnel is also necessary. Adaptability to functioning in differing roles and organizational constellations also contributes to research, development and dissemination processes.

16. Competencies are needed in the procedures of field testing and evaluation. These are integral to the developmental process.

17. Competencies of computerization will be needed for eventual incorporation of computerized management and computer assistance in learning.

18. Competencies in cost accounting, budgeting and budget projection are needed for achieving increasingly efficient procedures and assuring adequate program flexibility.

19. Competency in valuing is needed. Valuing should be continuously applied to programmatic conceptualizations, procedures being applied and resulting products.

Plans

Procedures will be initiated to acquire these competencies by employment of people who have them or by training present staff members.

There is need to acquire competency and understanding in systems analysis and systems synthesis. This is essential for Development Division staff members. Plans are under way to provide this specialized training.

Competency in interpersonal relations, communications, group processes and organizational administration are needed by Development staff members. It is anticipated that these will be acquired through individual attendance at training sessions.

Implications

The Northwest Regional Educational Laboratory will continue its focus on the application of systems technology to the improvement of education in the following areas:

1. Developing instructional systems to improve teaching competencies
2. Developing instructional systems to improve comprehensive planning for culturally different groups
    a. In metropolitan cities
    b. Among Indians and Alaskan natives
    c. For migrants
3. Developing instructional systems to improve instruction in small schools

With adequate funding the Laboratory will:

1. Collaborate with appropriate agencies to develop total individually prescribed instructional systems for learners of all ages

2. **Collaborate with interested institutions and agencies in the region to develop total instructional systems that will prepare personnel to adequately perform emerging educational roles and functions**

PART II

PROGRAM 100

Developing Instructional Systems to Improve Teacher Competencies

DEVELOPING INSTRUCTIONAL SYSTEMS TO IMPROVE TEACHER COMPETENCIES

INTRODUCTION

This is a comprehensive description of the Northwest Regional Educational Laboratory's Program 100, Developing Instructional Systems to Improve Teacher Competencies. The statement attempts to be inclusive and specific at a programmatic level. This document projects the program over a ten-year period. Modifications of this program are anticipated as clarity is gained over time. This statement is presented as a basis for planning and establishing priorities and as a model which can be altered as need or opportunity is clarified.

NEED AND RATIONALE

Modern technological advances confront society both with issues and new potentials. Kahn and Wiener note that:

> Our capacities for and commitment to economic development and control over our external and internal environment and concomitant systematic, technological innovation, application, and diffusion of these capacities are increasing, seemingly without foreseeable limit. The capacities of our culture and institutions to adapt to so much change in so comparatively short a time may be a major question.... Additional issues are raised as technological development increasingly facilitates oppressive social controls. Man's unremitting, Faustian striving may ultimately remake his natural conditions--environmental, social, and psychobiological--so far as to begin to dehumanize or to degrade his political or ecological situation in some very costly or even irrevocable manner.[1]

---

[1] Kahn, Herman, and Anthony Wiener. THE YEAR 2000: A FRAMEWORK FOR SPECULATION ON THE NEXT THIRTY-THREE YEARS. New York: The MacMillan Company, 1967.

Technology and Education: The Problem and the Potential

The technologies which have helped to create some of these issues can also help resolve them. They make possible the application of increasingly objective and rational procedures for identifying goals, diagnosing complex situations, retrieving data, designing creative innovation, determining feasible action strategies, assessing demonstrable progress, and disseminating validated inventions. *In short, man is arriving at a point where he will be able to explicitly project, plan for, and determine his future.* The possibilities of this future range from total destruction to an evolutionary cycle in which man's creative, humanitarian potential is fully released. The implications of the latter alternative are so startling as to overshadow present results of the technological and scientific revolution. The immense implications of the former underline the urgency of planned effort to influence the directions of change toward increased rationality.

The need for a well educated, rational citizenry, which Jefferson saw as necessary for a democratic society, can now be seen as necessary for the survival of mankind. Crises of world strife indicate the critical gap between our need and our capabilities for management of complex problems. The need to move with total commitment to improve the insights and functions which facilitate education and learning is urgent. This is the basic reason for increasing the rationality of our citizenry.

In a democracy, it is essential that citizens master the new technology in order to apply it to pluralistic ends. The ultimate objective is to free the broadest range of individual human potential to explore the infinite spectrum of truths and life meanings. In our society, responsibility for attaining this goal lies largely with educational decision makers.

Education's responsibility is to all age levels. Research indicates that abilities and aspirations of people must be activated early if they are to fulfill their potential. For example, in his report on STABILITY AND CHANGE IN HUMAN CHARACTERISTICS, Bloom points out that general intelligence is 50 percent developed by the age of four and 80 percent developed by the age of eight. It is also apparent that adults of every age will need to be continuous learners so they can adapt to and influence a continuously changing society.

Technology, then, has this major implication for education in a democratic society: Citizens must be involved in mastering and applying technology, both to cope with the problematic issues it raises and to realize the new potentials it offers. Likewise, technology has three major implications for the teaching-learning process and for the preparation and roles of educators.

1. It frees teachers from their historic, primary function of content management. Direct man-machine interaction can provide a major part of instructional functions more efficiently than has ever before been possible. The teacher now can focus on more

valuable functions, such as diagnosing learner abilities and needs, creating an appropriate range of learning experiences, helping pupils learn how to learn, personalizing learning, fostering unique individual potentials, developing higher thought processes, maximizing the learner's desired motivations, and involving learners in creating knowledge, applying principles, exploring life styles, and shaping values. Functions such as these have long been ideals of educators. Only now have the advances of technology begun to provide teachers with the tools and procedures to carry out such ideal functions.

2. Educators need to master new knowledge and acquire the enlarged capabilities for effective use of the new technologies. Two new areas of technology are immediately relevant to educators. The first area includes machine technologies, such as machines for programed learning and computers for managing individualized instruction. The second is a range of technologies needed in carrying out generic process functions which support pupil learning in most content areas. These include such capabilities as creating and applying valid data gathering instruments to assess pupil norms and analyzing matrices of pupil-teacher interactions to serve as bases for experiments in increasing the effectiveness of teaching-learning processes.

3. Technology should be applied in creating instructional systems whereby educators may acquire new knowledge and skills required to carry out the necessary functions of a radically transformed and improved system of education.

The Challenging Potential for Education

We are currently involved in three kinds of instruction: (1) human-to-human instruction, (2) man-machine systems of instruction, and (3) instruction provided through a diversified learning environment.[2] In some respects human-based instruction has proven inadequate for preparing individuals to play desirable adult roles or to maximally develop their full potential. The development of an instruction system based upon man-machine interaction and the application of systems technology to education makes it possible for the first time to individualize and humanize instruction. It is this second concept of instruction with which we are presently primarily concerned.

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[2] John Goodlad discussed the three eras of instruction in detail in an address delivered in connection with Dr. Lambert's inauguration as NEA executive secretary. A copy of the speech can be obtained from the NEA Center for the Study of Instruction.

The learning environments in 21st century schools probably will differ greatly from those in present schools. Students will be programmed through a wider variety of learning experiences designed to enable them more fully to realize their potentials. Many learning experiences will be provided by such devices as electronic consoles in homes connected to computers in community learning centers. Responsibilities for education will be shared more widely by various community agencies and institutions.

A prescribed age for entering and leaving school probably will be nonexistent. The ends of education will be based not only on answers to the question, What knowledge is of most worth? but also on answers to the question, What kinds of human beings do we wish to develop? The future role of the teacher and other educators will be markedly changed. This change has already begun and will continue through this century and beyond. The processes that are involved in getting people and organizations ready to accept and prepare for new roles are as critical--or perhaps even more so--than the knowledge of the technological advances that create them and facilitate their performance.

Following are some major concepts, assumptions, and beliefs about learners, teaching, the preparation of teachers, and support systems accepted by the authors as a basis for their predictions and programmatic efforts.[3]

Important Concepts and Beliefs About Learners and Learning

Learning is primarily a matter of developing a person's total resources for understanding and dealing creatively with his life and the environment within which he lives. Learning deals with analysis as well as with memory, with systems as well as with isolated units, with behavior as well as with thought processes, and with divergent as well as with convergent thinking.

Learning involves inquiry. It is an active, seeking process.

Individualization is necessary. Broad are the ranges of individual differences, rates of learning, readiness for specific learning experiences, and learning styles.

A positive self-concept and clarity of purpose are critical for learning. Learners must be helped to develop skills essential for defining their learning goals.

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[3] Several of the assumptions given here are adapted from "An Orientation and Strategy for Working on Problems of Change in School Systems," by C. Jung, R. Fox and R. Lippitt in CHANGE IN SCHOOL SYSTEMS, (Goodwin Watson, Editor.) Washington, D. C.: National Education Association, NTL-NEA, 1967. Others are derived from a proposal of the Northwest Regional Educational Laboratory to the USOE entitled, "A Competency Based, Field Centered Systems Approach to Elementary Education," 1968, (ComField).

Learning is enhanced when the learner understands and accepts the learning goals and is involved in planning how to reach them.

An effective learning environment provides a wide variety of resources. Individualization demands it.

Learning is not only an individual task but a social responsibility. Helping relationships between the learner and other students is essential.

Acts of learning are complex, social-psychological phenomena. What is seen by the potential learner, how it is related to other awarenesses, the contexts in which it is remembered, and how it is applied behaviorally will depend on his perceptions of its relevance, its salience, and upon conditions of reinforcement.

Four kinds of learner outcomes can be predicted for those who have good learning experiences: (1) The learner will perceive himself more clearly as (and be more positively motivated to become) a learner. (2) He will increase his cognitive incorporation, retention and recall of content. (3) He will enlarge the application of what he has learned to an insightful awareness of his environment and to integration of what he has learned. He will more nearly approach a state of wisdom. (4) He will be more capable of exercising purposeful control over his environment and adapting to it in ways that enhance human purpose and dignity.

Important Concepts and Beliefs About Instruction

Technology will increasingly supplement, but not replace classroom teachers. However, several present teacher functions can be performed more effectively as a result of the technological advances.

A growing array of learning materials, media and instructional strategies will be available. Teachers must be able to make rational decisions about their value, selection and sequencing.

The teacher's role in the future is likely to feature (1) a decreased emphasis upon information giving, (2) increased attention to the development of higher order cognitive capabilities, (3) increased attention to the development of constructive affective outcomes, and (4) the integration of both cognitive and affective processes for the elevation of learner achievements.

Constructive response to accelerating rates of intellectual and technological development change, such as the information explosion and the rate of technological advances, demands a personal capacity on the part of teachers for thoughtful and systematic change and moral commitment to humane use of new capabilities.

A major, relatively untapped resource in education is the self-instructional capacity of the learner. Truly effective teachers will provide more pupils with more opportunities to learn how to learn.

A realistic perception of one's self, and one's interpersonal relationships, is crucial for highly effective teaching.

Important Concepts and Beliefs About the Education of Teachers

To help pupils acquire "learning to learn skills" the teacher himself must have the skills and orientation of an active learner.

Productive teacher education programs center around predefined performance objectives (behavioral objectives) that define competencies teachers need in order to function effectively in their emerging roles. This includes performances that meet subject matter objectives, teaching strategy objectives, professional identity objectives, and personal and interpersonal relations objectives.

Instructional systems which produce these outcomes with a known degree of reliability should be developed for, and employed in, the teacher education program.

Information management systems which permit students to enter, advance, and complete the program, insofar as possible, on the basis of criterion performance measures, should be developed.

Such a program should be adaptive and responsive to individual learner differences. Operationally, this means such a program permits students to move through it at different paces, with different combinations of instructional experiences which fit individual learning styles and backgrounds. All prospective teachers, however, should be required to perform at agreed minimum levels of competence prior to their certification.

Throughout the teacher education program the effort should be directed toward helping each student understand himself and to bring this understanding to bear upon his educational and professional decisions.

Important Concepts and Beliefs About Organizational Functions Which Support the Learning-Teaching Process

The school system exists and functions in a total context of the societal and organizational structure. Societally, the learner experiences influences such as those of family, peer groups, and the norms implied by mass communications media. These may influence the school system both directly and indirectly through the learner's orientation and expectations. The school system is also influenced directly and indirectly by other organizations in the community concerned with youth development.

The internal structure of the school can be conceived to include five levels of human phenomena that condition the effectiveness with which human and material resources are utilized to create learning experiences for children: (1) the student as a self, an individual psychological and biological unit; (2) the classroom peer group as a subculture of student clients; (3) the level of others--termed direct workers here--who interact with students in creating learning experiences for the pupil; (4) the level of those who directly facilitate or inhibit the efforts of the direct workers; and (5) persons who influence the nature of the school system as an organization.

Structurally, provision should be made for a degree of autonomy which supports innovativeness of teachers. Influencers of teachers--particularly the principal--should have the skills required to assess the nature of support needed by individuals and particular staff groupings. Simultaneously, there needs to be a kind of linkage between groupings throughout the system which supports the identification and spread of innovations.

There should be continuous interactive effort at goal clarification throughout the community. Collaboration of teachers, parents, peer groups, recreation leaders, social service personnel, youth employers, religious leaders, law enforcement agents, and others is most important.

There should be continuity in the educational experience. This applies, in a vertical sense, as the student moves through the school system from year to year, and in a horizontal sense, as the student moves from teacher to teacher, or from school to school, to club meeting and back to family in the course of a day.

There should be continuous growth opportunity for direct workers. They need opportunity to develop both interpersonal and technological behavioral capabilities.

Limits to the Scope of the Program

Some of the concepts and beliefs that have been stated suggest implications for action which go beyond the intended scope of Program 100. The focus here is restricted to process capabilities training for those in the teacher type roles. The training designs of Program 100 will occasionally involve other roles, such as administrative ones, in cases where they directly influence the teacher's performance of process functions. The program does not, however, extend to the training of administrators or persons performing other roles per se. Nor does it extend to creation of adaptations appropriate for implementation with specialized populations such as the culturally deprived or geographically isolated. Such effort would be in the province of programmatic definition based on such substantive related assumptions in addition to many of the same assumptions in the rationale for this program.

Possible Future Roles and Organizational Configurations

It is anticipated that educational programs of the future for students at all levels will involve continuous progress plans and flexible, individually planned, competency based instructional programs. Numerous elementary and secondary schools across the country are already operating or organizing such programs.[4] Plans are presently underway to develop educational specifications for teacher preparation programs based upon the same principle.[5]

A major instructional function historically performed by teachers has been information giving. In the future, most of this function can be performed by machine technology. The teacher role will be largely that of an instructional manager including more important functions such as (1) diagnosing learning needs, (2) prescribing learning sequences enabling learners to more fully develop their potentials, (3) managing a multi-sensory learning environment, and (4) providing the appropriate learning experience and guiding each pupil through the program in such a way that he will develop into a self-directed, continuous, active learner. In short, the instructional manager will be responsible for providing a completely individually prescribed instructional program. To make intelligent diagnosis and to prescribe for individual learners and to see that the educational experiences prescribed are provided, it is essential that the instructional manager have the information about (a) the learner, (b) available relevant curriculum modules, and (c) available instructional material and technology contributing to the operation of the prescribed program. The human being, i.e., the instructional manager, then in reality becomes the computer whose primary responsibility is to program individual students through learning sequences designed to develop behaviors which are clearly defined.

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[4] Project PLAN and Project TALENT are discussed by John C. Flanagan in "Functional Education for the Seventies," PHI DELTA KAPPAN, September, 1967; seventeen high schools have been selected to develop programs based upon the organic curriculum principle in the ES '70 program; "The Clinical School" by Allen Dobbins, et. al., of Harvard University, describes a proposed experiment for a high school in Portland, Oregon (mimeographed paper).

[5] "A Competency Based, Field Centered Systems Approach to Elementary Teacher Education," (ComField) Northwest Consortium of Schools and Colleges, State Departments of Education, Northwest Regional Educational Laboratory, and the Teaching Research Division of the Oregon State System of Higher Education, 1968.

In order for the instructional manager to be maximally effective, he must understand that computers can do much routine work and plan accordingly. He will then be freed to play the role of a professional decison maker. He must also be familiar with systems technology and its application to education.

In addition to the change in the role of the teacher from instructor to instructional manager, the roles of the principal, superintendent, counselor, special education teacher, curriculum specialist and supervisor will also change. Differentiated roles in the classroom are also anticipated. New roles will be created. The presence of clerical aides, teacher aides, intern teachers, assistant teachers and probationary teachers working under the general supervision of an instructional manager will be the rule rather than the exception. The roles of instructional engineer and instructional designer will be created. System analysts and computer programmers will be a part of the educational team. External and internal change agents will be essential in the schools to build self-renewal systems. Development specialists positions will be established.

A variety of capabilities will be essential to enable educators to play the facilitator role to assist learners in attaining their potential. With access to these capabilities, institutions will doubtless explore a variety of roles and role combinations for implementing the process functions. A pluralistic evolution of these alternatives is inevitable and desirable in a free, democratic society. Explicitness in projecting these images and planfulness in developing operational prototypes is necessary for rapid, economical improvements. Any particular model must not be viewed, nor implemented, as a prescription. It should be simply an additional possible choice made available for consideration and adaptation by local settings. One can hazard the following general projections for the year 2000:

> Acts of learning will be the explicit responsibility of the learner.
>
> Most members of society will conceive one of their roles as continuous learning
>
> Most members of society will conceive one of their roles as facilitating some kind of learning for others
>
> A variety of collaborating roles for contributing to facilitation of learning will be operational
>
> A major part of learning will take place in home and community settings other than the school as it is presently conceived

Almost all knowledge will be available through technology

As the process of knowledge utilization improves, an increasing proportion of attention will be devoted to knowledge production and exploration of philosophical and value issues

Capability Areas for Conducting Generic Process Functions

A broad range of capability areas for conducting generic process functions can be identified. These are abilities useful in most, or all, instructional content areas, both in preservice and inservice programs. As technology improves and educators learn how to use it, the functions which these capabilities make possible will gain increasing priority for educators. Eight major capability areas and concepts and activities in development of each are discussed below. These range from understanding the student as learner to that of interorganizational collaborator. Instructional systems can be designed to develop these competencies. Here is another example of the double implication of technology for the preparation of teachers, i.e., technology provides the time to attend to learner needs that heretofore have only been given lip service and also provides the means by which the new competencies can be acquired.

Educators can assist students to employ appropriate strategies for identifying personal relevance of learning and assess the effectiveness of their learning efforts by:

> Learning to help students learn to identify and establish priorities for their own relevant learning needs. (This includes student self-assessment of their own progress in learning.)
>
> Acquiring behaviors that help students learn to seek out and create self-confrontations which result in personalized, active involvement in learning.
>
> Developing the ability to help students learn how to retrieve and use appropriate resources in their learning. (These include techniques and skills for benefiting from human resources.)
>
> Developing competencies to help students open themselves to the influence of others and to create interpersonal relationships which support learning.

Teachers can support student self-directed learning experiences by:

Assisting students in learning to use programed instruction materials and machines along with books, magazines, films, laboratory equipment and other learning materials

Building a repertoire for assisting students in learning to use computers and computer procedures

Gaining the capability of helping pupils to conduct, be involved in, and create learning experiences based on gaming, simulation and role playing

Developing skills for helping pupils learn how to assist each other in learning

Teachers can utilize strategies employed during pupil-teacher interaction which promote appropriate pupil behaviors by:

Learning to recognize and exemplify behaviors which help pupils acquire behaviors pertinent to inquiry process.

Developing the ability to recognize and perform behaviors which elicit from other students corresponding behaviors relating to concept formulation, generalizing from data, and applying known principles to new situations.

Building a repertoire for formulating questions which stimulate students to develop higher thought processes and explicit use of valuing behaviors.

Learning techniques for diagnosing students' motivational patterns. Teachers can learn to recognize and perform behaviors which elicit from students increasingly selective, motivational attitudes and behaviors.

Acquiring skills for diagnosing each student's potential for creativity. Teachers can learn to recognize and perform behaviors which evoke and support creative behavior of pupils.

Learning to recognize and diagnose student behaviors which indicate needs for emotional support or increased reality awareness. Teachers can learn response behaviors which provide such support or reflections of reality.

Developing the capability of recognizing and performing nonverbal behaviors congruent with their intentions. Teachers can learn to diagnose actual intentions of nonverbal behaviors of students.

Teachers can acquire ability to analyze objectively and decide upon teaching strategies by:

Gaining capacity to recognize and analyze patterns of student-teacher interactions. Teachers can learn to perform experiments in the use of their behaviors to achieve different interaction patterns.

Acquiring the ability to record systematically classroom behavioral sequences of teachers and teachers of teachers. Educators of teachers can learn to interact constructively with teachers in objective analyses of teaching patterns. They can learn to support teachers in exploring modifications of their teachers' styles. Teachers can learn the relationship between ends and means as they plan for appropriate process and content goals.

Learning skills of using, adapting, and developing objective data gathering procedures for diagnosing attitudes, expectations, and norms in the classroom.

Developing competence to manage individually prescribed instructional systems.

Educators can acquire abilities to initiate curriculum development and planned change by:

Applying problem solving processes which utilize scientific and objectively-gained knowledge of their classroom environment. (This process includes cycles of modification in conducting action alternatives to arrive at improvement goals.)

Learning and applying the principles of writing program instruction materials. (They can learn to write brief programs for pupils to use in achieving cognitive objectives.)

Developing competence to make simplified adaptations of systems analysis and systems synthesis as processes for planning and carrying out classroom improvement efforts.

Acquiring skills of creating PERT charts and critical path charts as techniques for clarifying and specifying steps in taking action.

Educators can acquire capacity to increase their interpersonal effectiveness by:

Improving listening, speaking, and interaction skills. Teachers can learn techniques for maximizing understanding as they encounter differing interpersonal relationships.

Learning ways of providing help and of actively seeking and receiving help. Educators can learn techniques for creating support relationships to maximize their own learning.

Developing the ability to become constructively involved with others in decision making. (Educational decision makers can learn techniques of working with groups that maximize the use of expertise in decision making.)

Acquiring skills of collaborating in debriefing critical incidents to identify constructive, future alternatives. (This includes procedures which increase personal responsibility and decrease the likelihood of fruitless faultfinding or inaccurate blaming.)

Gaining expertise in diagnosing real conflicts and dealing with them as issues which can be resolved constructively.

Learning alternative ways of opening themselves to influences of others which promote personal growth.

Learning skills of developing points of consensus in their work with others. Educators can learn techniques for working with others to maximize contributions based on individual differences so that group efforts result in creative productivity rather than lowest common denominators.

Educators can acquire ability to perform new roles and to develop new role relationships which facilitate organizational functioning and self-renewal by:

Preparing trainers who can help others acquire abilities needed to perform new roles.

Serving as members of teams which train school district groups to identify, diagnose and fulfill needs for local school improvement.

Learning abilities necessary for participation in research and development work. (This includes ability to adapt and develop curriculum.)

Developing ability to operate as a member of a team to diagnose pupils' needs and prescribe learning experiences.

Educators can acquire concepts, techniques and attitudes necessary to improve interorganizational collaboration by:

Gaining competence for collaboration with training experts to diagnose needs and to design and provide manpower development activities for a school district.

Acquiring insights and attitudes that facilitate productive use of consultants and serving as consultants to others.

Learning techniques of collaboration in interorganizational consortia. (This includes techniques of avoiding obstructive ingroup norms and coping with intergroup barriers and procedures for creating collaborative mechanisms.)

Developing capacity to move in and out of ad hoc groups or temporary systems. (This includes techniques for rapidly establishing working relationships focused on achieving short-range goals while avoiding preoccupation with concerns not relevant to a central issue.)

Here a note of clarification is necessary to classify the limited scope of Program 100. The program's focus is on the teacher type role. Consequently, when systems analysis and synthesis are included in the preceding list, it is implied that training in systems technology would be an adaptation of this process at a simplified level appropriate for classroom teacher functions. Training materials created for the Research Utilizing Problem Solving Process will not include alternatives appropriate for work with specialized populations such as culturally different minorities. Such adaptations would be created in a programmatic effort focused on other efforts with which Program 100 could collaborate. Program 100 instructional systems will provide skills training basic to successful functioning of preconceived roles or teams, but will not extend fully to the overall training of these roles or teams as such. The program provides only for training in the generic process skills. Instructional content-focused training will be complementary to the scope of the program.

Individualization and Personalization

Quite properly, many educators are concerned that advances in technology may tend to dehumanize society. If attention is devoted entirely to use of computers--to the exclusion of generic process skills--dehumanization could result. The essence of this issue lies in recognizing a differentiation between the potential of the computer in helping to individualize learning on the one hand and the complementary potential of applying certain of the generic process skills to personalize learning on the other. Learning is individualized when it is appropriate to the readiness and rational participation of the learner. Learning is personalized when the learner is actively involved in making choices based on confrontations relating to the relevance to himself of what is to be learned.

The capacity of the computer to individualize instruction represents a major improvement in education. It can help to eliminate unnecessary discouragement of a learner facing tasks for which he is not prepared. It can free the gifted student from confinement to a pace tending to discourage interest. As already noted, computers can help free educators for increased personalization of learning.

Educators can personalize learning by helping students to: (1) learn how to learn; (2) identify priorities for learning; (3) create confrontations for themselves to become active in learning; (4) consider the implications of what they are learning for creating a life style; and (5) interact in influencing the development of a society worth living in. By attending to the generic process functions which personalize learning--at the same time that technological advances are being applied--the result should be to increase humanization of society. Personalizing learning recognizes the learner as the ultimate, appropriate decision maker. It allows for developing an infinite variety of human potentials. It utilizes technology as an aid to rational decision making, but never allows preprogramed materials to dictate to the individual which decisions are personally relevant.

We agree with Hamreus that use of technology need not dehumanize teaching. To the contrary, responsibly conceived systems can enlarge the roles of personal choice and human interaction in the learning process. The systems approach is simply a guide for planning and developing the instructional programs to achieve that which is desired. For example, if the educator's goal is a program that brings teachers into closer interaction with learners at a higher level than simply information giving, systems concepts can help behavioral technologists organize means of doing so.

Many examples show that our present educational practices place teachers in roles that are quite low on the human interaction scale. Systems concepts enlarge our capacities to perceive where human functions can be enhanced, and where automated, mechanical, or other procedures can better accommodate instructional routine.

Creating a Model for the Preparation of Educational Personnel[6]

From the work of Crawford at the Human Resources Research Office (HumRRO) has come an instructional systems design model[7] which has enabled educators to conceptualize preparation programs that are dependent on neither time nor rigid course structure. They permit students to enter, advance, and leave the program at their own pace on the basis of criterion performance measures. Advances in technology now make it possible to attend to each of the following components essential for developing and operationalizing a teacher preparation program that is both individual and personalized.

Behavioral definitions of the skills or competencies needed to perform any role or function in the school are now possible. The knowledge that is prerequisite to these terminal behavioral objectives can be identified.

Systematically designed instructional programs or "instructional systems" which permit professional educators to attain the required competencies can be provided.

The means whereby trainees can demonstrate these competencies under supervised laboratory, clinical, and internship conditions can now be provided. These are applicable at both the preservice and inservice level.

Procedures can be specified whereby the competencies identified in the program, the instructional systems developed to bring about these competencies, and the means of assessing them are continuously evaluated and updated.

A cost accounting system can be perfected to obtain data on the developmental and operational costs of complex programs. Cost analyses can be made for each of the components of the program, and for the program as a whole, with the view toward finding out not only the most economically feasible approach to the operation of such a program but also the total costs.

The institutional and community ecology support components essential for the successful implementation of radically different preparation programs can now be attended to systematically and objectively.

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[6] Hamreus, Dale G. "Prototype Development." NATIONAL RESEARCH TRAINING INSTITUTE: MANUAL FOR PARTICIPANTS IN RESEARCH DEVELOPMENT. CORD Project. Monmouth, Ore.: Teaching Research, 1967. p. IV-1.

[7] A system is defined as any combination of persons, objects or events united by some form of regular interaction or interdependence in the accomplishment of a specified outcome.

A computer based information management system can be designed to store and retrieve the massive amount of information that must be processed in a short space of time inorder for preparation programs to operate effectively and efficiently.

Complex preparation programs can now be analyzed prior to installation through computer based simulation and gaming procedures.[8]

Educational specifications for a Competency Based, Field Centered Model Elementary Teacher Preparation Program exemplifying the above are now being written by a consortium of 26 Northwest colleges and universities, five State Departments of Education, Teaching Research (a division of the Oregon State System of Higher Education) and the Northwest Regional Educational Laboratory.

Once having moved to a program which centers around the development of specified behavioral outcomes (competencies), the task of instruction becomes considerably different than in traditionally organized programs. In a competency based program, instruction is aimed specifically toward the development of specified competencies. The instruction is judged to be effective to the extent that it permits the realization of the specified competencies at a given level of performance. Principles of instructional systems engineering need to be adopted to facilitate the instructional process within this context.

The aim of the instructional systems approach is to bring about the production of measurable and predictable outcomes. The systems approach employs a rigorous analysis of curriculum and a systematic structuring of this material from the learner's point of view. The result is a logical, functional, step-by-step path whereby the learner proceeds from his personal starting level through accomplishment of previously set performance objectives.

If the instructional technologist is to get maximum use from media in improving learning outcomes, he must be able to answer how, what and when media can most effectively be employed. To answer these questions he must know what specific learning outcomes are expected of students. Also, the questions must all be considered within the constraints of the educational industry: learner differences, learner outcomes, learning processes, and the conditions for learning. What this all leads to is the need to manage and operate a set of complex elements that make up the particular subsystems in the educational industry within which the instructional technologist happens to confront an instructional problem.

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[8] ComField Program, op. cit.

The teacher preparation programs--inservice and preservice--must include objective and systematic ways to ensure that these competencies are developed. Intelligent use of media, technology or instructional material cannot be learned out of context. That is, experience must be provided under proper supervision to identify the events that provide the conditions of learning and to identify the form of the instructional events. As teachers and prospective teachers have the opportunity to test out hunches regarding appropriate methods-media tradeoffs in pursuit of behavioral objectives for learners, increased sophistication in professional decision making results. Increasing the number of alternatives in the teacher repertoire, strengthens the power of the decision he makes. Opportunities need to be provided for teachers to become familiar with or be able to retrieve through electronic information management systems the range of available media and technology that are judged to be appropriate for the establishment of appropriate conditions for learning.

Choice and Rationality: The Current Social Experiment

There has, historically, been a major gap between theory and practice in education. Paradoxically, accelerated technological advances could lead to a change in this state of affairs. (Technological advances are speeding up changes in education.) Technological innovations might be implemented on the one hand with results that are unmanageable and undesirable in terms of the ideal educational potentials. The implications, issues, and procedures examined in this paper, on the other hand, point to the directions which these changes may take and the positive goals which can be attained. Technology can be used to plan actions which move society toward a desired future. It can help planners become more explicit about what future is desired. It supports the possibility for educators to disseminate, throughout society, skills in the procedures of explicit planning and valuing. As processes for determining future directions and valuing choices become more explicit throughout society, the possibilities will represent a test of man's rationality. Surely, this possibility constitutes a current social experiment which holds immense overall implication for the training of future educators.

Such a clear test of rationality may never be achieved. We may now be choosing implicitly to avoid dissemination of generic process skills. If not, people's capabilities to exercise control over change will be less than this potential. Another possibility is that we may be too late as a society to achieve an optimum degree of rationality. Numerous observers note that we may now be in the process of destroying the rational elements of our society. Recent history provides considerable evidence that societies can turn reactionary. The possible negative consequences of changes induced by technology may be used as a rationale for retreat from taking advantage of its positive potential. But we assume that it is possible to synthesize efforts to utilize technology for fuller development of human potentials by helping more people acquire generic process skills. Such a synthesis can result in the most constructive evolution in history.

The most immediate barrier to the kinds of progress which can now be made lies in digressive conflicts. Arguments as to whether technology is good or bad, whether attention should be given to applying technology for improving instruction or to disseminating generic process skills, whether it is more important to individualize learning or to personalize--such arguments are irrelevant oversimplications. They are digressive conflicts. The most immediate implication for realizing the progress which can now be made is the need for comprehensive conceptualization which leads to creative synthesis of technological, procedural, and ideological implications. By such processes we can spell out our goals and the means to achieving them. We need the will to do so.

Timeliness of this Programmatic Undertaking

We should move now, with total commitment, toward improving teaching functions which facilitate pupil learning. This is the essence of increasing the rationality of our citizenry.

With growing awareness of that critical need, our society has begun to make its vast resources available to the improvement of education. Perhaps the greatest impetus to change has been the new availability of a portion of federal revenues. Industry also is beginning to provide capital. Research is growing in the areas of learning, teaching and organizational change. Broader conceptualization of processes of research, development and dissemination is providing more adequate frameworks for allocating enlarged resources. Such concepts are also directing an increasing number of persons to commit their energies within those frameworks. This constitutes an enormous social intervention in response to a critical need. Clearly conceptualized programmatic efforts, such as Program 100, are needed to give order to this process.

The need is immediate. Resources are becoming available. What of the readiness of the field to be active collaborators in this type of programmatic undertaking? Children are showing an increased commitment toward learning. Parents are becoming more involved. Norms for innovating are replacing old ones of maintaining the status quo. Institutions of higher education are seeking new approaches. State Departments of Education are showing renewed leadership in supporting improvement. In the past two years more than 800 educational institutions and organizations have become members of the Northwest Regional Educational Laboratory. Some sixty individuals throughout the region have contributed actively to the development of instructional leadership. One hundred and fifty-seven persons have received training to provide instructional leadership. Two thousand six hundred persons have involved themselves in workshops. A majority of teacher training institutions in the region have begun giving credit for training in the skills of Program 100 activities. State Departments of Education have been active and are clarifying their roles in the dissemination of these efforts. Professional associations at the state and local levels are active and new organizational structures are being explored at the national level to increase such collaboration. NWREL is daily receiving requests for training which exceed developmental readiness to respond. The field is not only ready for this undertaking, it is already actively involved in making the undertaking the kind of collaborative venture necessary to insure its long-range success.

LONG RANGE OBJECTIVES

Accelerating social change constantly creates new needs and opportunities. There is an increased urgency for citizens to acquire enlarged capabilities to make affirmative and rational decisions regarding new matters in new circumstances. For these reasons Program 100 focuses on development and testing of procedures designed to equip teachers of all subjects with enlarged ability to help pupils acquire such capabilities. Emphasis is placed on improvement of the following teaching functions:

> Procedures to promote pupil initiated and self-directed learning
>
> Procedures for improving interaction between teachers and pupils
>
> Procedures to increase the objectivity of classroom analysis and the effectiveness of improvement efforts
>
> Procedures for maximizing the effectiveness of interpersonal relationships
>
> Procedures which provide support for continuous learning of school personnel

These procedures are viewed as essential elements of most phases of learning. They are therefore termed "generic processes." Concepts and skills needed to perform these generic processes are derived from scientific knowledge of theory, research, and methodology.

Program 100 has three major ten-year objectives:

> Five instructional systems sequences will be developed by which teachers can acquire generic process capabilities at demonstrable levels of proficiency
>
> By 1977 all Northwest teachers will have access to these five instructional systems sequences
>
> Involvement of persons in education-concerned institutions throughout the region in acquiring developmental skills as they help create the systems will result in establishment of mechanisms for continuous addition of more generic process systems to each of the initial instructional systems sequences

The above objectives imply a continuation and refinement of collaboration between NWREL and other educational organizations which serve as disseminating agencies. The following additional outcomes are intended.

> Personnel of related education institutions (State Departments of Education, universities, teachers associations and local school systems) will become increasingly active in improvement of teacher competencies
>
> New constellations of interinstitutional and inter-organizational effort will evolve from cooperative effort
>
> Efforts to improve teacher competence will become more rational in terms of systematic use of scientific knowledge of innovation, diffusion, purposeful change and management

RESEARCH BASE

Recent research greatly increases our ability to identify specific teacher behaviors which facilitate specific types of learning. Much additional exploration is necessary. Forty-two generic processes in which teacher competencies can be improved have already been identified. These are derived from scientific knowledge of theory, research and methodology. The primary sources of current activities of Program 100 are listed as follows:

Inquiry Development -- Suchman's theory-based work initiated at the University of Illinois

Development of Higher Level Thinking Abilities -- Research directed initially by Tyler and Taba as part of an 8-year study and further developed by Taba at San Francisco State College

Analysis of Pupil-Teacher Interaction -- A methodology developed initially by Flanders at the University of Minnesota

Questioning Strategies Leading to Productive Thinking -- Gallagher's research-based theoretical model at the University of Illinois

Systematic and Objective Analysis of Instruction -- Cogan's theoretical model and research developed initially at Harvard University and further developed at the University of Pittsburgh

Interpersonal Communications -- Wallen's theoretical conceptualizations related to work by the National Training Laboratories

Interpersonal Decision Making -- Fossmier's research methodology developed at the University of Oregon

The primary sources of proposed new activities for Program 100 are listed as follows:

Increasing Achievement Motivation -- McCleland and Alshuler's research and development work at Harvard University

Cross-Age Peer Help -- Research theory models and developmental work by the Lippitts at the University of Michigan

Research Utilizing Problem Solving Process -- Jung and Lippitt's theoretical model developed in an inter-university consortium, The Cooperative Project for Educational Development

Systems Technology -- Corrigan's developmental work using a theoretical model at Chapman College

Preparing Education Training Consultants -- Research, theory and methodology integrated in training program by the National Training Laboratories

Teacher capabilities to apply these processes can be developed now. Additional research will continue to indicate ways that teachers can best utilize such capabilities. Some of the processes specifically provide teachers with skills to utilize such emerging research in their decision making.

TEN-YEAR PLAN

Major Operating Components

The ten-year plan for Program 100 involves six major kinds of operating components for working toward the stated objectives. The first is a component for internal administrative coordination of the program and linkage with other NWREL programs. The second provides for research directly concerned with the developmental program work and strategy for dissemination. The third component is designed to integrate instructional systems for similar types of generic processes into the five comprehensive sequences. The fourth is intended to relate developmental work to dissemination plans. The fifth component will provide mechanisms for continuous addition of more generic process systems to each of the original sequences.

The sixth type of components includes a series of temporary components called activities. An activity is pursued by an *ad hoc* team of collaborators who develop an instructional system prototype for a particular generic process.

The components of administrative coordination, research, dissemination and activities have been operational during the past year. The integration of an instructional systems component will be added in 1968-69. The mechanisms for continuous addition of systems components will be needed in 1969-70.

There are six phases of developmental work on a generic process. These phases and their intended outcomes are presented in Chart I. Chart II presents a ten-year projection of expected outcomes.

Changing Procedural Emphases During the Programmatic Sequence

Three types of procedural effort were underway as the program was initiated. One was the development of activities through the six phases shown on Chart I. (See Supplement A for a more detailed description of this phasing.) A second was an initially small amount of basic research. The third provided administrative coordination of the developmental and dissemination work. It should be noted that such programmatic administration differs functionally from, and is complementary to, the Laboratory organizational administration. This latter type of effort helps maintain an organization within which work can be productive. The first two types are production oriented. Consequently, the program is not a separate organization within an organization, but, rather an integral component of the larger whole.

A wide variety of procedural function capabilities has been, and will continue to be, identified and classified. These can be synthesized into five continuous learning sequences including:

pupil-teacher interactional skills

analytical and planned change skills

interpersonal skills

skills to support pupil self-initiated, self-directed learning

role training and training for roles to support continuous learning.

The fourth type of procedural effort of the program will be the inauguration of each continuous learning sequence via integration of an initial group of appropriate training designs. For example, we are ready to begin integration of our training designs for inquiry, higher thought processes, interaction analysis and questioning strategies as a foundation for our interaction skills sequence.

The fifth type of procedural effort relates developmental work to the dissemination of training throughout the region. An initial plan for this work is outlined in Supplement B.

The sixth type of procedural effort will be development of mechanisms for feeding newly developed skill areas into the operable continuous learning sequences.

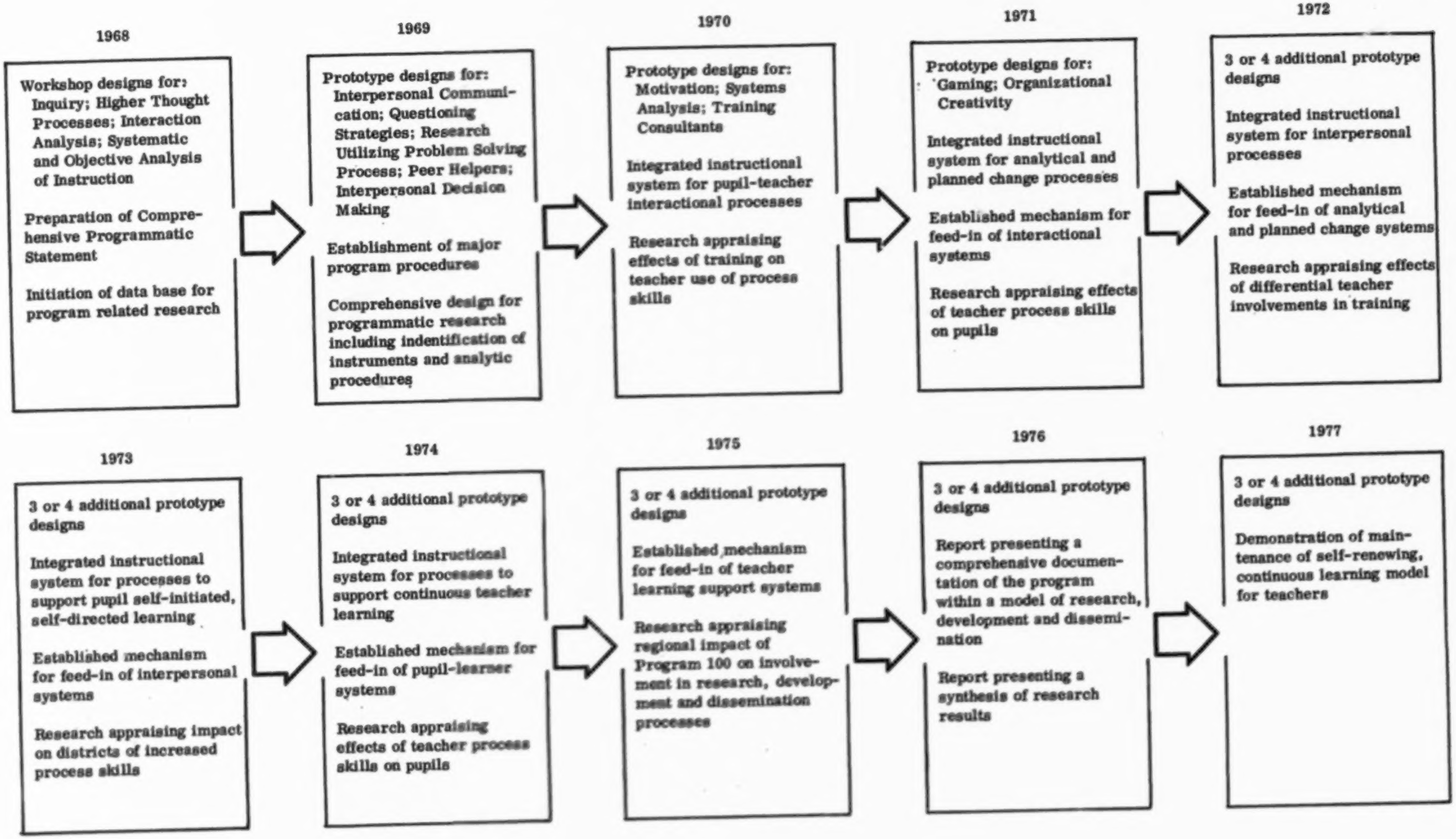
CHART I

DEVELOPMENTAL PHASES FOR A GENERIC PROCESS SYSTEM

PHASE	PROCESS	PRODUCT
I: Scanning	Staff identifies and selects promising innovations derived from theory, research, and methodology.	1. Basic instructional system 2. Instructional leadership personnel 3. Informational materials
II: Retrieval and Preparation of Developers	Expert formulates experimental design and prepares trainers to try it out.	4. Entry package of materials stimulate readiness for involvement
III: Prototype Development and Testing	Staff and selected senior trainers become a developmental team to explore training alternatives and specify behavioral objectives.	5. Administrators'package for support of the new skills 6. A base of strategically placed instructional leaders
IV: Development of Basic Instructional System	Systems analysis procedure is applied to developing a basic instructional system to the point of assuring trainee achievement of prescribed levels of competence.	7. A base of strategically located trainees 8. A base of strategically placed trainers of instructional leaders
V: Instructional Leadership System Development	Systems analysis procedure is applied to developing an instructional system to train instructional leaders to prescribed levels of competencies.	9. Some new developers 10. Additional baseline data on potential for dissemination in the region
VI: Mass Dissemination	Coordinator builds on the collaborative involvement of earlier phases to accelerate dissemination through service institutions and school districts.	11. Report of action research results of the developmental work 12. A regional network of capable persons commited to continued modification and improvement of concepts and procedures

CHART II

TEN-YEAR PROJECTION OF EXPECTED OUTCOMES



1968

Workshop designs for: Inquiry; Higher Thought Processes; Interaction Analysis; Systematic and Objective Analysis of Instruction

Preparation of Comprehensive Programmatic Statement

Initiation of data base for program related research

1969

Prototype designs for: Interpersonal Communication; Questioning Strategies; Research Utilizing Problem Solving Process; Peer Helpers; Interpersonal Decision Making

Establishment of major program procedures

Comprehensive design for programmatic research including indentification of instruments and analytic procedures

1970

Prototype designs for: Motivation; Systems Analysis; Training Consultants

Integrated instructional system for pupil-teacher interactional processes

Research appraising effects of training on teacher use of process skills

1971

Prototype designs for: Gaming; Organizational Creativity

Integrated instructional system for analytical and planned change processes

Established mechanism for feed-in of interactional systems

Research appraising effects of teacher process skills on pupils

1972

3 or 4 additional prototype designs

Integrated instructional system for interpersonal processes

Established mechanism for feed-in of analytical and planned change systems

Research appraising effects of differential teacher involvements in training

1973

3 or 4 additional prototype designs

Integrated instructional system for processes to support pupil self-initiated, self-directed learning

Established mechanism for feed-in of interpersonal systems

Research appraising impact on districts of increased process skills

1974

3 or 4 additional prototype designs

Integrated instructional system for processes to support continuous teacher learning

Established mechanism for feed-in of pupil-learner systems

Research appraising effects of teacher process skills on pupils

1975

3 or 4 additional prototype designs

Established mechanism for feed-in of teacher learning support systems

Research appraising regional impact of Program 100 on involvement in research, development and dissemination processes

1976

3 or 4 additional prototype designs

Report presenting a comprehensive documentation of the program within a model of research, development and dissemination

Report presenting a synthesis of research results

1977

3 or 4 additional prototype designs

Demonstration of maintenance of self-renewing, continuous learning model for teachers

By 1970, all six kinds of procedural effort will be underway. By 1974, all five instructional sequences will be operational and the essence of the programmatic undertaking, e.g., the integration of sequences, will require less effort. By 1977, integration of sequences and basic research related to the program will be complete. Development and integration of learning sequences for new skill areas will continue. When the programmatic sequences are complete, this development may be continued by NWREL or some other combination of institutions depending on what is desirable or feasible at that time.

Criteria For Selecting Program 100 Activities

Eight criteria are used to select new activities for each component.

1. An activity focuses on providing training to develop ability to carry out a process function. This is as distinguished from ability to determine instructional content. The skills and functions provided by Program 100 activities should have general applicability in numerous content areas and age levels.

2. The initial activities selected for Program 100 have immediate applicability within existing school role definitions and expectations. The new capabilities and functions which they generate will create both a readiness and a demand for subsequent activities that focus on new roles, role relationships and new organizational structures and procedures.

3. Priority for adding new activities will be based on considerations of the need for them and the integrative support they provide for the other activities involved in moving from existing educational patterns toward projected ones. For example, as teachers achieve high levels of behavioral skills in areas of interaction (inquiry, higher thought processes), abilities to use research to solve problems will be needed to decide when and how to draw upon expanded behavioral repertoire.

4. Activities will be relevant to the concepts and beliefs which bear on program objectives.

5. Before becoming an activity of Program 100, an area of skills will be clearly conceptualized on bases of scientific knowledge or technology.

6. Activities will be selected partly on basis of degrees to which their potential usefulness has been demonstrated by developments in some field(s) of science and/or practice.

7. Before becoming an activity, some base of pilot developmental work will have been undertaken for training in the area of skills.

8. Consideration will be given to probable developmental costs and the ultimate potential for low cost dissemination.

Distinctions Concerning Basic Research

It should be noted that the basic research part of this undertaking is distinguished from evaluation and field testing procedures which are integral parts of activities development and integration of continuous learning sequences. The basic research effort includes theoretical conceptualization of the nature of development and dissemination. It should include collaboration in design of basic studies. Major contributions might be made in instrumentation development and clarification of appropriate analytic procedures.

Devoting a proportion of a developmental program's resources to basic research is necessary and valuable for three reasons. (1) It gives developers an involvement-based awareness of research. (2) The developers' vantage point between that of those who practice and those more totally devoted to research provides a unique perspective for conceptualizing and identifying certain research priorities. (3) The focus of research in which developers choose to involve themselves will create a base for attracting the interest of full-time researchers to hitherto neglected areas. It will provide feedback from practitioners in a form that can influence the efforts of researchers.

The major annual foci of program-related research are projected as follows:

1968: initiation of a data base for program-related research

1969: creation of a comprehensive design for programmatic research including initial identification of variables, instruments and analytic procedures

1970: completion of a study of teacher use of process skills as a result of training

1971: completion of a study (No. 1) of pupil effects of teachers' applying process skills

1972: completion of a study of differential teacher involvements in training

1973: completion of a study of the impact of increased teacher application of process skills on a school system

1974: completion of a study (No. 2) of pupil effects of teachers' applying process skills

1975: completion of a study of the regional impact of Program 100 in terms of operationalizing a research, development and dissemination model

1976: synthesis of programmatic research results

Estimates of Funding Needs

Estimates have been made of the level of funds necessary to pursue this program during the ten-year period from 1968 through 1977. Chart III presents a projection of the annual funds needed for each type of effort. The annual totals are indicated. An additional figure needed by educational institutions of the region to support involvement of school personnel in continuous learning is also indicated. These latter figures are based on an objective annually involving all persons in teacher type roles in 90 hours of procedural functions training. We anticipate reaching this goal by 1974. We anticipate a level-off of this funding need in the field despite a steadily increasing number of personnel. This will be due to the balancing effect of initial capital expenditures and development of increasingly efficient procedures. We anticipate that other sources of funding will emerge as industry, different levels of government, and local citizens become increasingly involved and committed.

The full cost of integrating this program of training into computerized systems is not included in these projected figures. As computer resources become available, a complementary and separately funded program of computerization should be established. The procedures being employed by Program 100 facilitate this step.

Chart IV shows different percentages of funds used for procedural effort. These shifts indicate that the essense of the programmatic undertaking is the shift from a proliferation of uncoordinated training designs to the establishment of sequences of continuous training for use of research, developmental and dissemination processes.

Evolving Clarity and Changes in Definition of Purpose, Objectives and Procedures

This is a current statement of an evolving conceptualization. It is considered to be generally valid and inclusive. At the same time, we expect to achieve increasing clarity which will yield further elaboration and shifting emphases

CHART III

PROJECTION OF ANNUAL FUNDING FOR PROGRAM 100 AND FUNDS TO THE FIELD TO SUPPORT TRAINING

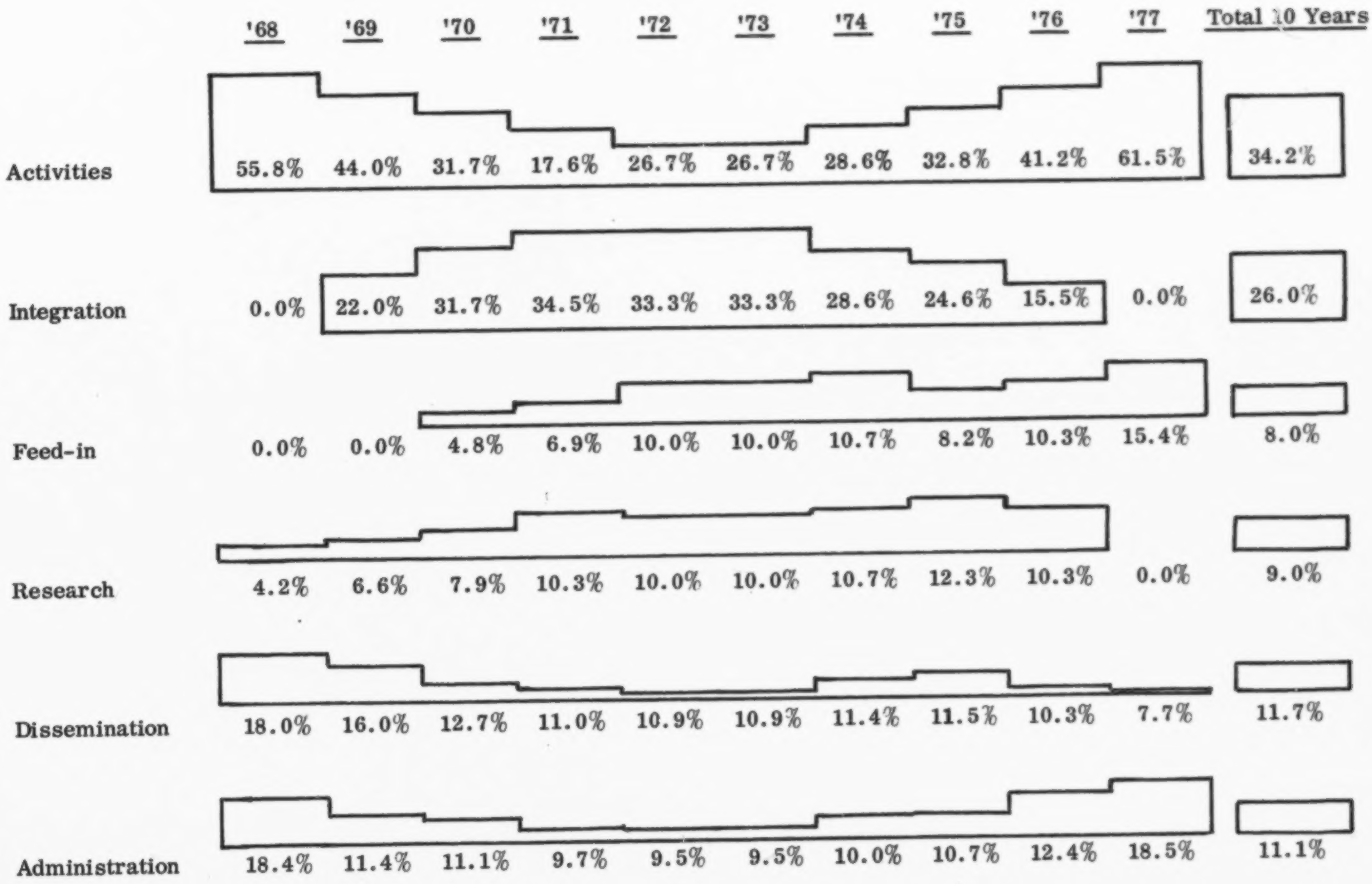
(Numbers represent thousands)

		'68	'69	'70	'71	'72	'73	'74	'75	'76	'77	10 Year Total
Funding for Program 100	Activities	150	200	200	200	200	200	200	200	200	200	1,950
	Integration	0	100	200	250	250	250	200	150	75	0	1,475
	Feed-in Mechanisms	0	0	30	50	75	75	75	50	50	50	455
	Research	12	30	50	75	75	75	75	75	50	0	517
	Dissemination	51	73	80	80	80	80	80	70	50	25	669
	Administration	52	52	70	70	70	70	70	65	60	60	639
	Total	265	455	630	725	750	750	700	610	485	335	5,705

		'68	'69	'70	'71	'72	'73	'74	'75	'76	'77	10 Year Total
Support to the Field	Total	0	1,000	3,000	6,000	9,000	12,000	15,000	15,000	15,000	15,000	91,000

CHART IV

PROGRAM 100 ANNUAL RELATIVE PERCENTAGE OF FUNDS DEVOTED TO TYPES OF PROCEDURAL EFFORT



in definitions of purpose, objectives and procedures. The contribution of this increased clarity will be constant reformulation of this programmatic statement into a theoretical conceptualization of social intervention from which generalizations of causal relationships can be made. While such an objective may be premature, we include such effort in our priorities.

Summary of Areas of Necessary Developmental Competencies

A variety of areas of competency are needed to carry out the functions of the developmental phases described above. The nature of the products developed and the procedures applied must not simply be a function of competencies readily available, or biases of the developers. The range of potentially applicable competencies should be inclusive enough so that an adequately broad perspective will be used to determine the criteria referents which lead to the developmental products. At this point, Program 100 has identified 19 areas of competencies essential to the functions of its developmental work.

1. Ability is needed to forecast alternative futures and to derive contrasting implications from competing alternatives.

2. Expertise is needed in determining the content of any procedural functions, e.g., the "moves" of inquiry, for which competency training is being developed.

3. Capabilities to utilize research are essential. These include retrieval, formulating generalizations and deriving implications for cognitive learning within instructional systems as well as to provide guidelines for identifying priorities, diagnosing developmental issues, constructing alternatives in the instructional systems, assessing progress, determining issues relative to dissemination.

4. Instructional leadership capabilities are needed during phases of exploration and field testing requisite for developing components of instructional systems.

5. Ability to use the procedures of systems technology are needed, especially to identify the variety of criterion referents needed for Phase IV development of the basic instructional system.

6. Capacity to specifying intentions and expectations via such means as PERT charts and critical flow charts are needed for communication and coordination of efforts.

7. Conceptual awareness is needed in the area of process training. Instructional systems should incorporate a large amount of behavioral practice by the trainee and internalize changes on the basis of rapid personal feedback regarding one's behavior. Such "here and now" process learning is both powerful and complex and represents its own critical area of expertise.

8. Skills in, and a sensitive orientation toward the importance of, personalizing the involvement of the learner in what is being learned are needed. They include skills of creating types of confrontations which heighten learners' personal involvement based on generalizable humanness of the issue involved in making the confrontation.

9. Capabilities and awareness are needed in developing relationships which provide interpersonal support for learning. The feedback needed in learning many procedural skills demands that attention be given to creating growth oriented, mutual help relations. The economy obtainable for mass dissemination of these skills by having a system of learners trained to help each other learn makes these skills an essential inclusion in development of instructional systems.

10. Social engineering abilities are needed so that the instructional systems which are created will be conceived in the context of their relationship to and impact on the social systems in which they, and their outcomes, will be applied. For example, new skills applied by teachers will need to be supportable by appropriate corresponding skills of administrative practice; the manner of learning new skills must not be overly disruptive to continuous operations of the system; and, the consequences in pupil behavior of these innovations must not instigate counterbalancing resistive forces on the part of parents.

11. Information management capabilities are needed in the developmental process as well as for incorporation into finished instructional systems.

12. Skills of writing appropriately for various target groups and different purposes are essential.

13. Concepts and skills involved in writing programed instruction materials are needed. At many points in an instructional system conceptual awareness can be obtainable most economically by this means.

14. Skills are needed in the development of audiovisual materials and devices. More important, conceptions of purposeful applications of these materials can add meaning to learning. They can go beyond livening the transmission of knowledge. They can produce the strong affective responses to confrontations which personalize learning. They can present modeling behavioral specimens and feedback of one's own behavior. They can present alternative representations of concepts and approaches to discriminations and syntheses.

15. Skills are needed in interpersonal effectiveness for teamwork functioning as a member within an organization devoted to development and dissemination work for extraorganizational linkages to research producing and practitioner oriented organizations. The range of skills necessary for this developmental work is so broad that teamwork becomes an absolute necessity. Flexibility of movement among changing team formulations will be part of the necessity. Adaptability to functioning in relation to differing role and organizational constellations is a predictable necessity in the context of conceptual overviews of the research, development and dissemination process. High levels of such capability can increase the efficiency of application of skills in many of the other areas.

16. Testing and evaluation abilities are necessary. These must be conceived and operationalized as integral to the developmental process--as cyclical approximations eventuating in achievement of defined criterion referents.

17. Ability to use computerized processes will be needed for economic evaluative procedures and for integration of computerized management and computer assisted learning into the instructional system.

18. Skills of cost accounting, budgeting and budget projection are needed for increasing efficiency and for maximizing flexibility in ventures demanding creative exploration and high risk.

19. Skills in procedures of, and commitment to a priority for, valuing are needed. Valuing should be continuously applied for appraisal of programmatic conceptualization, the biases represented in it, procedures being applied, products and outcomes, and the implications of outcomes.

Assessment of Progress of Program 100

The preceding statement of Program 100 purpose, rationale, procedures and sequencing implies the need of multiple evaluative criteria. The kinds of questions which concern us, our current intentions for seeking answers, and our future expectations and desires for engaging in evaluative activity are presented below. Criteria for assessing the results of Program 100 must concern the efficiency of procedures for developing products, the outcomes of using the products, the efficiency of the products developed, the growing magnitude of the undertaking, the impact of this development dissemination strategy upon the region, the contributions made to scientific knowledge, and the relation of effort to purpose.

We currently have no objective means of assessing this efficiency. During 1968, we will institute a systems analysis approach to product development in Phases IV and V activities. We will determine requisite and feasible items for a cost accounting procedure. We will explore procedures for assessing the satisfactions of personnel participating in activities. These requirements will serve as criteria for achievement in 1968. It is assumed that this effort will provide a basis for beginning an objective assessment of procedural efficiency in 1970.

What Are the Outcomes of Using the Products of Program 100 Activities?

Training in an instructional system must result in the trainee's ability to demonstrate behavioral competencies of the activity. Application of systems analysis in the developmental work of Phases IV and V will produce assessment procedures which will be included as part of the instructional systems. Trainees will demonstrate competency as they proceed through the system. Criteria for success will be the inclusion of such procedures in activities that reach this phase of development during 1968.

Training for use of an instructional system must result in the trainee's increased use of behavioral skills. Criteria for assessing success during 1968 will involve subjective self-reports of samples of trainees in activities which have reached Phase III. A design for eventual objective assessment will be devised for those activities that enter Phase IV.

Changes in teacher behavior resulting from involvement in Program 100 activities must influence improved learning experiences of children and improved functioning of the organization to which the teacher belongs. Criteria for assessing these types of success are more or less explicit in different activities. Much work must be done before most questions we are concerned with here can be answered objectively. Guidelines for defining "improvement" must be derived from the comparatively small amount of theory and research available. Discrete variables must be determined. Valid and reliable instrumentation must be developed. Carefully designed research studies must be conducted. Such effort logically needs several years and the attentions of a number of collaborating institutions. Program 100 is undertaking a major five-year study of changes in pupil-teacher interaction from a sample of teachers who have received training in certain activities. Criteria for success in 1968 will be the accomplishment of tasks for this study as designated on the time line for that period. It is anticipated this study will produce some data analyses of pupil effects by 1970. The Laboratory is collaborating with the Research and Development Center at the University of Oregon (CASEA) to develop instrumentation to assess changes in organizational effectiveness. Additional contributions in this area are expected from the Cooperative Project in Educational Development.

How Efficient Are the Products Developed by Program 100 Activities?

The products of Program 100 activities must gain their specified results with efficiency of time and economy. They must be attractive to users and must not raise barriers to their own mass dissemination. Criteria for success in 1968 will be the instituting of objective field testing procedures. Costs and reactions to training alternatives will be balanced against levels of achieved competence. These procedures will produce data such that by 1970 generalizable quality control standards can be applied to development of this type of product.

Is the Magnitude of Program 100 Expanding?

The goal of Program 100 is mass dissemination of a broad range of newly specified capabilities. The strategy calls for active participation of persons in organizations concerned with education throughout the region. There must be an expanding number of persons involved and becoming sophisticated in the developmental work. There must be an expanding number of instructional leaders. There must be an increasing incorporation of these activities into the curricula of teacher training institutions. There must be increased numbers of persons trained. There must be a spinoff of Laboratory involvement in successfully disseminating activities and initiating new ones. Criteria for success in this instance is found in a balance between these increasing numbers and the level of available funds. In 1968 we will be able to determine appropriate expectations of different types of involvement related to different phases of an activity. This will allow us to make accurate projections for the rate of development of activities. These projections will be a baseline for determining feedback concerning needs of recycling developmental work. They will provide guidelines in preparing the field for the phase of mass dissemination. An additional criteria for success in this area is the increased willingness of the field to support both developmental work and dissemination with its own resources.

What is the Impact of Program 100 Development and Dissemination Strategy On the Region?

The major kind of impact which must be achieved is increased disseminability of quality innovations in a quality controlled manner throughout the region. All types of educational institutions must become aware, and increasingly sophisticated collaborators in the research, development and dissemination process. The quality of the innovations (e.g., products) has already been mentioned. The quality of their dissemination involves skills of adaptation and implementation on the part of the recipient as well as collaborative consultative skills on the part of the disseminator. This must result in positive perceptions of the Laboratory by the field, increased self-perceptions of field persons as active partners, increased activeness of inquiry from the field about activities, increased willingness to collaborate, and positive reactions of researchers and other developmental organizations. In 1968, samples of these kinds of data will be collected using objective procedures. Determination of success reflected in the results will be subjective. Clearer conceptualization and improved research procedures will be needed to make objective assessments of success in this area. We believe such effort should have a high priority and have begun an effort to collect baseline data in 1968. The continuous goal should be increasing objectivity of the change process in education.

What Contributions Is Program 100 Making To Scientific Knowledge?

In 1968, Program 100 is continuing to carry out its five-year study of teacher-pupil interaction. We believe the contribution of this study may be methodological as well as of reporting results. A clarification of discrete, relevant variables and analytic procedures should support improved research designs in the immediate future. Collaboration with research organizations such as CASEA represents a second kind of contribution. These kinds of research involvements will eventually provide guidelines for development and dissemination work. This process will be greatly facilitated and accelerated when increased computer resources are available.

The development and dissemination model which we are gradually implementing, using a systems approach and field testing "feedback loops," will be a contribution of clarifying the place of evaluative work in the spectrum of social science activity. One of the greatest challenges of our time is a need for conceptualizing an integration of action dynamics and theoretical constructs. During 1968 Program 100 has the responsibility of presenting itself in this combined perspective for clarification and reaction of social scientists. Success will be the reaction of the scientists that the conceptual effort is progressing accurately.

What Is the Relation of Program 100 Effort To Its Stated Purpose and To the Stated Purpose of the Northwest Regional Educational Laboratory?

We must become increasingly explicit about the rationale of our purpose, the definition of achieving that purpose, and the valuing of what has been achieved. In addition to the variety of activities outlined above, we will seek the repeated reactions of the Program 100 Advisory Committee, the Northwest Regional Educational Laboratory Board of Directors, and our Laboratory colleagues in assessing this relationship and guiding modifications during 1968.

ACCOMPLISHMENTS AND PROGRESS

Planning

A ten-year plan for Program 100 work was prepared. The purpose, rationale, procedures, objectives, assessment, and personnel and material resources needed are specified. A comprehensive strategy for linking this developmental work to institutions which will participate in dissemination was written. An overview of intended evaluation and research efforts during the ten-year period was written. These three documents provided a base for writing a ten-year systems analysis of the program. (See Supplement C)

Development of Instructional Systems

Prototype instructional systems were completed for Inquiry Development, Higher Level Thinking Abilities, Analysis of Pupil-Teacher Interaction and Systematic and Objective Analysis of Instruction. This completes Phase III of work on these four activities.

Preliminary instructional designs were explored as Phase II work on Human Relations Training and Questioning Strategies Leading to Productive Thinking.

Training Developmental Personnel

Areas of competencies of some staff were increased in moving toward preparation to work as a team to begin synthesizing and transforming Phase III learning designs into competency based, self-instructional systems. Instituting the developmental chart procedure, writing specific objectives and training in systems technology has laid the base for initiation of this new team effort during the coming year.

Linkage With Dissemination Institutions

The first steps were taken to design a comprehensive strategy for dissemination of the skills and concepts on which the program is focused. The region's five State Departments of Education assisted in bringing together representatives of educational institutions and agencies to formulate immediate and long-range dissemination and utilization designs. These designs include provision for communicating the nature of generic process skills and alternative combinations of effort and funds for utilization of systems designed to develop those skills.

Providing Training For Instructional Personnel

The Laboratory has been widely involved in workshops designed to assist with developmental aspects of the program and to create instructional systems suitable for mass dissemination. Careful consideration has been given to strategic location of workshops and ad hoc teams of collaborators. This is creating a base of awareness and demand for eventual mass use of training systems.

During the previous year, 1966-67, the Laboratory conducted eight workshops to train 278 people in Inquiry Development, Development of Higher Level Thinking Abilities, Analysis of Pupil-Teacher Interaction and Systematic and Objective Analysis of Instruction. Three other workshops were financed locally. Additional advanced training was provided for a corps of instructional leaders. During 1967-68, the Laboratory was involved in 50 workshops to train 2,600 people in the above activities and in Human Relations Training and Questioning Strategies Leading to Productive Thinking. Twenty additional workshops were locally sponsored. Additional advanced training was provided for 200 instructional leaders.

Assessment and Evaluation

Multiple assessment and evaluation procedures are considered integral elements of developmental work. Consequently we are developing criteria for assessing the efficiency of procedures for developing products, the outcomes of using the products, the efficiency of the products developed, the growing magnitude of the undertaking, the impact of our development-dissemination strategies upon the region and the contributions to scientific knowledge.

One example of increased procedural efficiency was demonstrated in preparing for the proposed new activity for training Education Training Consultants. The developmental chart procedure, when first introduced, took about six months to complete. This summer it was accomplished in six weeks. Activity teams had been working for months to identify learning objectives of their designs. By training a specialist for this task, specific objectives for one activity were identified, cross indexed and processed for machine handling in four weeks. There are numerous indications that such increases in efficiency can continue.

Clearer conceptualization of the program has been the key to progress. One especially helpful procedure has been the application of systems technology to an overview of the program.

The first steps toward application of cost accounting procedures have also been helpful.

Early stage assessment of the outcomes from use of products, e.g., the prototype instructional systems, has yielded positive results. Those trained as trainers have been conducting an increasing number of locally sponsored workshops. Trainees interviewed a year later report themselves actively applying their new skills with positive effects for their pupils. Their initial enthusiasm has increased with experience in application. The major study of changes in pupil-teacher interaction of a large sample of teachers who have received training is continuing. A massive data reduction using factor analysis has yielded meaningful, new classroom variables. Individual teacher profiles and changes related to training will be able to be explored. Insights on the application of appropriate multivariate analysis procedures are emerging.

One evidence of increasing efficiency of instructional system products is seen in the changing cost factor. It may be illustrated by the progress in the activity Inquiry Development. A year ago there were almost no available trainers. The average cost per trainee was about $250 not including the cost for released time. The training could only be replicated by one of the scarce trainers. This year, a fast growing trainer group is emerging. The average cost per trainee is about $100 not including the cost for released time. The current design can be replicated with comparable trainee outcomes by much less sophisticated trainers. By the end of next year, the use of trainers in the design will be reduced by at least 80 percent. The average cost per trainee should drop below $25 not including the cost for released time. The need for released time will be reduced by up to 50 percent. The identification of behavioral objectives will lead to incorporation of techniques for assessing attainment of established competency levels in the final instructional system next year. This will establish that quality has been retained as changed training procedures have reduced costs.

The magnitude of the undertaking is growing rapidly. The number of persons doing developmental work as members of *ad hoc* regional teams has risen 50 percent. It will increase another 50 percent next year. The members of increased workshops, new instructional leaders, and additional trainees were cited earlier in this report. Figures already cited, and those given in the request for 1968-69, show the fast increasing size of impact on the region. Reactions to training are overwhelmingly positive. Some negative criticism has concerned conflicting expectations and confused coordination. These have provided guidelines for improving procedures in relating to the field.

Program 100 was begun to make a contribution to scientific knowledge. The emerging theoretical conceptualization of the program as a model and strategy for change represents part of this contribution. The pupil-teacher interaction study is a second part. Collaboration on data collection with the Institute for Social Research in Michigan should be noted. The need is seen for increased collaborativeness on research.

PLANS FOR 1968-69

Comprehensive plans for the program will be continuously revised as useful next steps are identified. Increasing specificity is anticipated. Particular attention will be given to initiating work of the team integrating activities into continuous learning sequences. Inservice training and use of consultants with unique development skills will be continued to combine the broad range of necessary competencies.

In line with the clearer programmatic definition which has been achieved, specific plans for 1968-69 work are reported in the Annual Report for Funding under sections titled: RESEARCH--101, INTEGRATION OF INSTRUCTIONAL SYSTEMS--102; and FOUNDATIONS FOR DISSEMINATION--103; and for each of the proposed Program 100 activities. The new numbering system for these Program 100 components is described next, followed by a representation of them in Chart V.

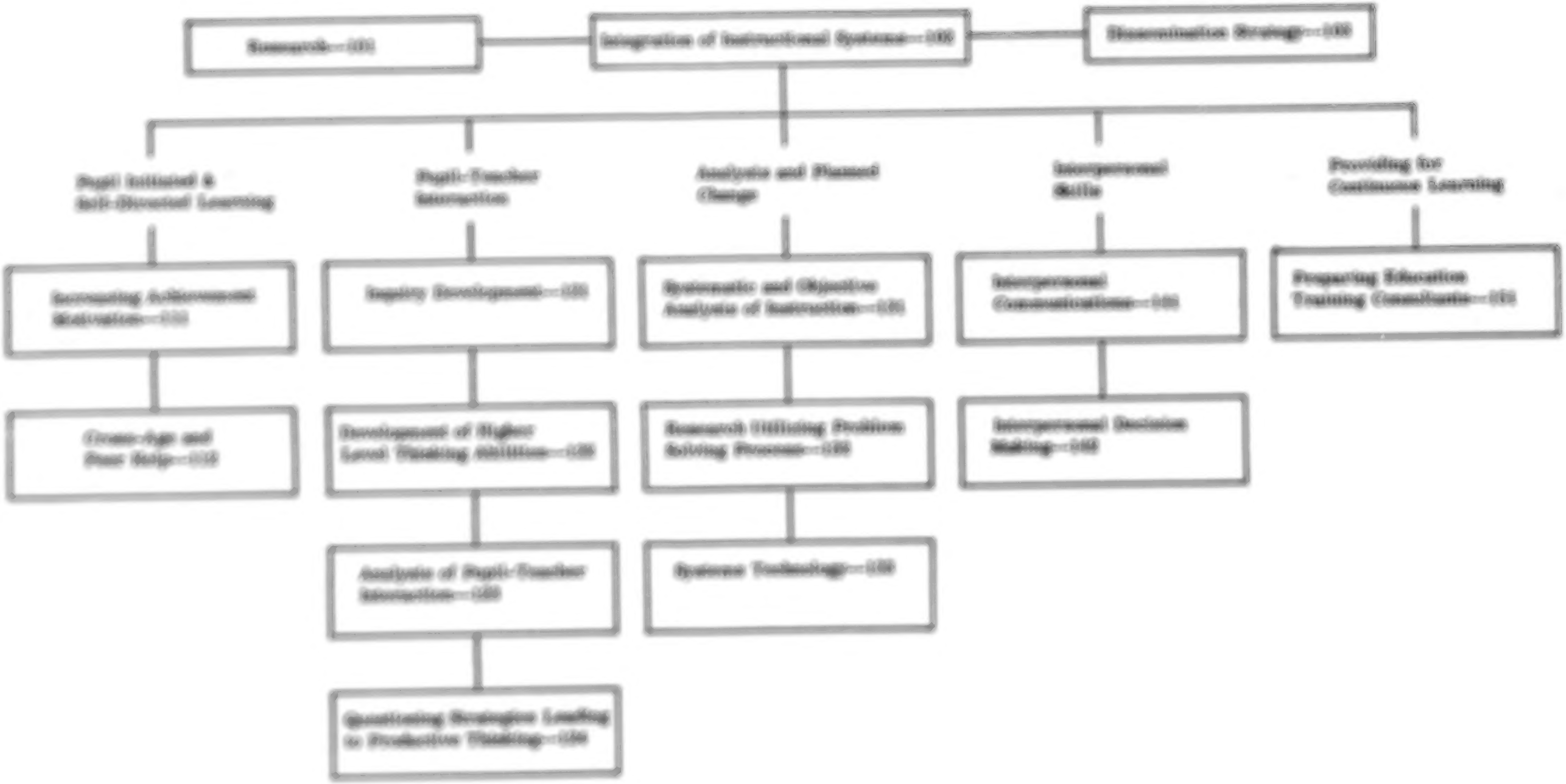
Program 100 Components

Program developments during 1967-68 required revision of the numbering system for Program 100 activities. For 1968-69, the following numbering system is being instituted. The 10-series denotes types of effort other than activities. The 11-, 12-, 13-, 14-, and 15- series each relate to one of the first projected continuous learning sequences. Activities in the 11- series will eventually become parts of the integrated instructional system for pupil initiated and self-directed learning. The 12- series will become parts of the pupil-teacher interaction system. 13- activities will become parts of the analysis and planned change system. 14- activities will become parts of the interpersonal skills system. 15- activities will become parts of a system to prepare for roles supporting continuous learning of teachers.

CHART V

PROGRAM [illegible]—1968-69

COMPONENTS


Research
Integration of Instructional Systems
Dissemination Strategy
Pupil Initiated & Self-Directed Learning
Pupil-Teacher Interaction
Analysis and Planned Change
Interpersonal Skills
Providing for Continuous Learning
Increasing Achievement Motivation
Cross-Age and Peer Help
Inquiry Development
Development of Higher Level Thinking Abilities
Analysis of Pupil-Teacher Interaction
Questioning Strategies Leading to Productive Thinking
Systematic and Objective Analysis of Instruction
Research Utilizing Problem Solving Process
Systems Technology
Interpersonal Communications
Interpersonal Decision Making
Preparing Education Training Consultants

The purpose of each component is summarized below.

Research--101

Plan and conduct a nine-year sequence of research facilitating Program 100 work and identifying factors affecting results.

Integration of Instructional Systems--102

Redesign prototype generic process instructional systems for integration into five continuous learning sequences.

Dissemination--103

Collaborate with educational institutions and agencies to provide major percentages of the region's teachers with opportunity to be continuously involved in learning generic process skills.

Increasing Achievement Motivation--111

Develop and disseminate an instructional system for leadership training in increasing achievement motivation.

This system will provide teachers with skills that influence increased need achievement in pupils. Pupils will become more concerned with excellence and will adopt achievement related action strategies in pursuing their goals. It will result in pupils being able to clarify and label their need achievement thoughts, relate these thoughts to appropriate action strategies, relate these thoughts and actions to appropriate life contexts, develop explicit achievement goals and become publicly committed to them, and build cognitive and emotional supports for themselves concerning their achievement motivation endeavors.

Research indicates that properly trained teachers can enlarge and activate pupils' achievement motivations. The training design developed by McClelland and Alshuler will be modified as a basis for system development.

Cross-Age Peer Help--112

Develop and disseminate instructional systems for leadership training and for preparation of pupils for exercise of effective cross-age peer help relationships.

Research indicates that training teachers in techniques and skills of preparing pupils to help each other makes pupils better and more active learners. The training design, created by the Lippitts, will be further developed for mass dissemination. This package will include orientation materials for administrators and training materials for the staff team conducting the program, for seminar leaders, and for older pupils attending seminars on how to work with their younger peers.

Leadership Instruction In Inquiry Development--121

Develop and disseminate an instructional system for leadership training in inquiry development.

This system is designed to help teachers learn to identify and perform 27 behaviors which enlarge pupil inquiry capabilities. System development embodies modifications of Suchman's work.

Development of Higher Level Thinking Abilities--122

Develop and disseminate an instructional system for leadership training in higher level thinking abilities.

This system is designed to prepare leaders to train teachers to identify and perform behaviors which promote pupil ability to use data, form concepts and apply principles. Leaders learn to help teachers sequence their behaviors to enlarge pupils' understanding of processes in which they are involved. This system is based on the earlier research of Tyler and subsequent work of Taba.

Analysis of Pupil-Teacher Interaction--123

Develop and disseminate an instructional system for leadership training in analysis of pupil-teacher interaction.

This instructional system is designed to prepare leaders to train teachers to use the Flanders interaction analysis system for coding and analyzing pupil and teacher behaviors.

Questioning Strategies Leading to Productive Thinking--124

Develop and disseminate an instructional system for leadership training in questioning strategies leading to productive thinking.

This instructional system is designed to prepare leaders to train teachers to create and use various categories of questioning strategies which help pupils acquire higher levels of thought processes. This system, based on the work of Gallagher, is complementary to those developed in components 122 and 123. But it goes beyond those two systems in promoting valuing behaviors.

Systematic and Objective Analysis of Instruction--131

Develop and disseminate instructional systems for systematic and objective analysis of instruction.

This system, based upon the work of Cogan, is designed to help appropriate personnel acquire analytical and interpersonal capabilities essential for clinical supervision of teachers. Such capabilities include concepts and skills of interpersonal communications and decision making, analyzing classroom processes, and identifying and changing teacher styles and patterns.

Research Utilizing Problem Solving Process--132

Develop and disseminate an instructional system for leadership training in research utilizing problem solving process.

The training design and materials created by the University of Michigan COPED project will be modified. Objective of the design is to increase twelve kinds of teacher teamwork skills and to develop the following action research skills: (1) formulation of improvement goals; (2) use of data gathering instruments and techniques for diagnosing classroom conditions; (3) derivation of action implications from locally relevant data gathered from the local setting; (4) design of action-research projects at the classroom and school building levels; (5) use of evaluative assessment instruments; (6) analysis and interpretation of action-research data; and (7) dissemination of results and innovations.

Systems Technology--133

Develop and disseminate an instructional system for training teachers to use systems technology.

Training in systems technology will increase teachers' planning, instruction and assessment skills. Training designs developed by Corrigan and Geis will be combined to develop an instructional system for helping teachers utilize system analysis and synthesis skills to formulate objectives and manage instruction.

Interpersonal Communications--141

Develop and disseminate an instructional system for improving teachers' interpersonal communication capabilities.

This system will be designed to help teachers acquire perceptual, listening and conversational capabilities essential for communication that facilitate group thought and action. It will utilize procedures developed by John Wallen and personnel of the National Training Laboratories Institute for Applied Behavioral Science.

Interpersonal Decision Making--142

Develop and disseminate an instructional system for improving teachers' interpersonal decision making.

This system is based on a simulation procedure being developed by Fosmire and Brissey which combines learning experiences with development of assessment capabilities.

Preparing Education Training Consultants--151

Develop and disseminate an instructional system to prepare personnel to conduct leadership training programs.

A training design, created by the National Training Laboratories, will be adapted and used as a basis for this work. The system will focus on: (1) development of interpersonal skills; (2) development of consulting skills; (3) diagnosing training needs and strategies; (4) creating readiness for training; (5) design and conduct of skill training exercises; (6) use of training resources; (7) conceptualizing programmatic training sequences; and (8) generating commitment to training.

SUPPLEMENT A

Phasing of Program 100 Activities

PHASING OF ACTIVITIES AND CORRESPONDING PROCEDURES

The development of Program 100 activities includes six phases whereby an idea from scientific knowledge is identified and ultimately made available to teachers for use in their work with students. These six phases are (1) scanning and selection, (2) retrieval, (3) prototype development and testing, (4) development of a basic instructional system, (5) instructional leadership system development, and (6) mass dissemination. It is conceivable that any given activity could enter the phasing procedures at any one of the six levels depending upon the degree of sophistication of development of the idea at the time of inclusion in the Laboratory program.

Phase I - Scanning and Selection

Phase I involves identifying and selection promising innovations derived from scientific theory, research, and/or methodology which represent procedural functions that will facilitate pupil learning. National and regional meetings, centers, and organizations working in the broad spectrum of educational change are monitored by NWREL staff who are alert to new ideas which might hold promise for teachers of the Northwest region. Information and feedback from other professionals in the region including those serving as a Program 100 Advisory Committee also serve as a source of data for programmatic consideration. When an idea is noted which appears to hold promise for Program 100 activities, additional information and data is obtained relative to the idea. This information is then presented to the program team comprised of Laboratory staff members working in the 100 program area. The criteria for selection presented in the previous section of this statement are applied.

An advisory committee consisting of knowledgeable educators from throughout the Northwest region is convened periodically to consider promising ideas referred to them by the Program 100 team. The advisory committee then recommends certain of the ideas presented to be included as a part of the ongoing program of the Laboratory. Program 100 team members, with the aid of appropriate consultants, make a tentative study of the feasibility of including such an activity as a part of Program 100. They collect additional background information as needed. A recommendation is made to the governing board of the NWREL who decides on the inclusion or exclusion of a particular activity as a part of a program. If the decision is to include it, it becomes a part of the annual funding request. On the basis of the funding level obtained, a decision is finally made to proceed with the activity or to drop it for the time being. At the end of a year's operation, the advisory committee reconsiders the total program and makes recommendations to either eliminate, continue or to add specific activities for the ensuing year's program. If it is determined that an activity does not hold the promise that was originally anticipated for it, it is possible to drop it from a Laboratory program at any time.

One of the basic decisions relative to Program 100 was that the program should concentrate on those ideas from scientific theory, research or methodology which have potential applicability to the function of the teacher. It was further decided that Program 100 should concentrate on a process level rather than the content level and in systems that have application across all grade levels and content areas.

Phase II - Retrieval

The Laboratory secures the services of an expert. The expert developer will then assist in identifying the current state of an art in the Northwest region. If there are insufficient numbers of adequately trained and available persons in the region to assist him in the further development of the idea and to serve as senior trainers in Phase III of the developmental work, he will then proceed to design a method of training potential senior trainers or developers. He concentrates on ways in which the idea might be relevant for those who will use it to facilitate pupil learning. When the initial training design has been developed, potential senior trainers are selected and trained by the senior developer. An integral part of the training of the potential senior trainers includes their personally testing the particular idea or techniques in their classrooms over as broad a range of content in grade level as is feasible at the time. Such testing of the ideas in training provide the expert and the potential trainers with some initial reality feedback helpful in further refinement of Phase III.

Phase III - Prototype Development and Testing

The original developer and the senior trainers that he has trained under Phase II become a developmental team to work out a prototype training design. They create a developmental chart of this design to specify its themes, schedule, materials, behavioral objectives and rationale. An example of a development chart is included. The developer and senior trainers conduct workshops to repeatedly modify and clarify elements of the design and record these shifts in the developmental chart. The chart serves as a guide for them in establishing priorities for their revisions during this exploratory period. It results in specification of the range of behavioral objectives and training alternatives needed for a systems analysis approach of Phase IV. Training using this prototype system will be continued throughout the region to create a base of readiness in the field at the same time that Phase IV effort is transforming the design into an instructional system which will be as self-operational as possible.

Phase IV - Development of the Basic Instructional System

A system analysis procedure is applied to development of a basic instructional system in Phase IV. The training design of Phase III called for a highly sophisticated instructional leader. The basic instructional system will be as self-

CHART VI

Sample from a Developmental Chart Used in Component 121: Inquiry

Day IV Themes	Schedule	Facilities, Materials and Equipment	Behavioral Objectives	Rationale
Provide opportunity for trainees to ask questions after they've worked on an assignment.	Total group of trainees meet with senior and associate trainers. Tell schedule for the day. Ask for questions, comments regarding tactical moves from evening meeting assignment.	Meeting room for total group.	Trainees voluntarily raise questions or state concerns regarding their own knowledge or skill development.	Trainees learn best when they program the time and place for their own data input.
Trainee self-evaluation.	Ask trainees to be examining themselves or their actions in relation to behavioral objectives. Where are individuals?	Copies of behavioral objectives. Suchman matrix for associate trainer and trainees.		Trainees involved in assessing their own growth are better able to identify their own commitment to learning.
Facilitate trainee's growth as inquirers.	Problem Focus VI. Problem presented by associate trainer. Trainer in small group uses 16 moves, but tends to use less process support moves to look for autonomous trainee behavior indicating Level IV and V.	Problem focus materials: mike, tape recorder, tape (tape lesson).	Inquirer Behavior Level IV 1-7, Level V 1-6.	

operational as possible. The expertise of the sophisticated instructional leader will be transformed into multimedia materials of a training package. The package will contain instruction for carrying out the training. Whenever possible, the function of instruction will be taken out of the instructional leader role and incorporated into the interaction of the trainees with each other and the materials. The package will contain alternatives for trainees to cycle themselves through as needed to reach specified levels of competencies. The instructional system will be modified through successive cycles of approximation until it has demonstrated capability of producing trainee behaviors at the specified competency levels. Field testing is a continuous part of this process. Procedures for assessing competencies become an integral part of the completed instructional system.

Phase V - Instructional Leadership System Development

We anticipate that some degree of instructional leadership may need to accompany the completed basic instructional system in most skill areas. As these systems are developed, a determination of behavioral objectives and training alternatives for training instructional leaders will be made. In Phase V, a systems analysis procedure is applied for developing an instructional leadership training system. Persons involved in the training for field testing of Phase IV will have been selected with concern for their potential as eventual instructional leaders produced by the instructional leadership system of Phase V. When field testing demonstrates efficiency of this second system, the activity is ready for rapid mass dissemination.

Skills of the activity may now be gained via the prototype workshop design or the more efficient basic instructional system. The next section of this statement will describe a third alternative which the program will eventually produce. The third alternative involves the integration of the activities skills into broader, continuous sequences of learning.

Phase VI - Mass Dissemination

The ultimate goal of mass disseminability of skills is a guideline throughout the phasing of a Program 100 activity. As new workshops are held in developing and testing systems, they are organized in such a way as to involve representatives from the entire educational spectrum of the Northwest region. This creates a potential cadre of instructional leaders and readiness of the field for being responsive to the new area of skills. Such involvement provides an opportunity for persons locally to become aware of what will be available and begin to consider its applicability to their setting. The degree of eventual dissemination will always ultimately be local determination.

To the extent that there is demand, it will be serviced by action and coordination of the State Departments of Education, institutions of higher learning, Title III centers, professional associations and local districts. The NWREL coordination of developmental effort does not extend to the servicing of mass dissemination. We anticipate that the school systems will increasingly incorporate training functions and roles to be active in this process. At the present time, over half the teacher training institutions of the Northwest region have sponsored special workshops for graduate credit in one or more of the Program 100 activities. As a result of these locally based workshops, they have had increasing numbers of their staff members trained and are beginning to incorporate the new techniques in the regular undergraduate and graduate training programs for teachers. There have been instances where several colleges have cosponsored workshops and permitted persons to enroll in the institution of their choice. It appears that this consortium approach will become increasingly popular in the future.

ROLE OF COORDINATING THE DISSEMINATION STRATEGY

Relating Program 100 efforts to education throughout the region calls for a special coordinative role. The developmental function of the Program must phase into dissemination functions of many other institutions. Readiness for dissemination is facilitated by procedure of persons from these other institutions being involved in the ad hoc developmental teams. This type of overview must be adequately communicated. As increased demand for training results from success of the workshops conducted as part of the developmental work, local systems need an understanding of the different roles played by the various institutions. The Program 100 team must not become seduced into providing a service role such that developmental work slows down. This would mean that availability of an area of skills would be delayed for the region as a whole. The institutions whose legitimate purpose is to service those demands, need an appropriate perception of the NWREL function of development being complementary to, rather than competing with, their service function. The function of coordinating the dissemination strategy is primarily one of creating these collaborative awarenesses and communicating realistic expectations of the timing of dissemination. Because of the expanding possibilities of conflict and confusions as added areas of training become available, a special role of coordination is seen as crucial in this area.

SUMMARY OF OUTCOMES AT THE ACTIVITY LEVEL

The phasing of activities and procedures just outlined results in a number of outcomes based upon the needs of the people involved in various phases of the program. These outcomes are as follows:

1. A multimedia, multiple alternative basic instructional system which provides the trainees and instructional leader with current materials and guidelines for selection of appropriate training alternatives.

2. A multimedia, multiple alternative training of instructional leaders' package. This package would be somewhat similar to the package in #1, but would be based upon some additional behavioral objectives appropriate to the training of trainers.

3. Public relations material for varied target populations designed to inform interested individuals in the region of the program and activities.

4. Multimedia entry package designed to serve as a means of making an initial entry into an educational organization or group. Such a package would function at the awareness level primarily and be focused on the outcomes of an area of training.

5. Administrators' package designed to instruct the administrators in the particular activity in order that they may have the necessary understanding of the system to support application of the new skills which it produces.

6. A base of strategically placed instructional leaders. If the approximately 75,000 teachers of the Northwest region are to be trained in the various activities of Program 100 and in view of the fact that the Northwest region comprises nearly 30 percent of the entire land area of the United States, it is necessary to have the trainers distributed geographically.

7. A base of strategically trained users such that visibility of the new skills supports their rapid dissemination.

8. A base of strategically placed trainers of instructional leaders to provide a cadre to meet the anticipated demands of a particular geographic region.

9. Some new developers. As additional people are trained and a particular system is tested in a variety of situations, the NWREL is alert to the contributions and interests of persons who could assist in future development. It is assumed that dissemination will be facilitated by having an increasing network of persons sophisticated in developmental work.

10. Additional baseline disseminability data for basic research. As the various systems are developed and evaluated, a mass of data is being accumulated which can serve as a baseline for further investigations into the teaching-learning processes and the dynamics of research, development and dissemination.

11. Action research results of the developmental work will stand behind the products being disseminated. They may also yield contributions of methodological procedures and stimulation to basic research.

12. A network of persons will be formed, devoted to continual modification of training procedures and of applications of the skill area beyond the time of Program 100 involvement.

SUPPLEMENT B

Initial Outline For Dissemination Strategy

DISSEMINATION STRATEGY

Part I - Involving Education Concerned Groups*

I. Primary functional requirements (Subsystem 2.2.1) - To design, implement, and evaluate a programmatic action effort for involving education concerned groups of the Northwest region, which by 1977 will achieve the following subobjectives consistent with a commitment to continuous learning as the ultimate professional role.

The demonstrated commitment by the majority of educational groups in the Northwest region to improved pupil learning experiences through the following action commitments

A. The implementation and adaption of validated instructional systems, on a continuing basis, for direct professional educators in the university, school systems, etc., which are designed to produce predictable skills in applying generic processes for facilitating learning leading to the achievement of predefined learner outcomes

1. Performance Requirements

a. Implementation of preservice training on a broad basis in generic processes integral to preservice programs leading to certification of teacher competencies

b. Implementation of inservice instructional system training programs provided by state and local educational groups, for all professionals which are designed to increase skills in application of generic processes; and which programs are provided on a continuing basis for all professional direct facilitators consistent with the commitment by educational agencies of continuous learning as a part of the professional role

B. The implementation of a regional, established by and managed by the regional educational agencies themselves, or subregional consortiums representing new role constellations and organizational structures for

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* Part I was contributed as part of a consultation from Robert Corrigan.

1. **Disseminating and installing validated instructional systems for the production of competencies in generic processes on a continuing basis**

2. **Establishing criteria for certification of trainers and the certification and assignment thereof to implement the defined preservice instructional systems in generic processes**

3. **Establishing accreditation for trainees on completion of stated instructional systems; and, the criteria for and assignment of individuals to higher level classroom management roles as generic process competencies increase**

4. **Establishing college credits for completion of stated instructional programs when completed outside of the university setting, and when taught by nonuniversity personnel meeting certification requirements**

5. **Establishing a regional or subregional network for sensing new requirements for identifying, designing and implementation, additional generic process instructional systems for professional educators consistent with changing requirements of learners in the real world for survival, growth and development**

6. **Establishing a regional or subregional task force capability for designing, producing, validating, disseminating, implementing and evaluating new instructional systems which are responsive to new generic process requirements previously sensed within the regional or subregional net; this task force will be composed of those personnel with demonstrated competencies in instructional system design produced through training systems developed in collaboration with the NWREL**

7. **Establishing an evaluation task force on a regional or subregional basis for assessing and monitoring the effectiveness of instructional systems in producing predefined behavioral competencies in applying generic process skills; and, the recommendation for design and/or management changes to ensure quality assurance in system implementation wherever these instructional systems are implemented, consistent with cost consideration**

8. Establishing a regional or subregional task force(s) for assessing regional change requirements in training and/or practice and to design and implement a management plan for programmatic action effort which is continuously responsive to identified and defined change requirements in the present or predictable future.

II. Planning rationale for NWREL - Project 100 management for the achievement of stated subsystem mission objectives consistent with the following built-in policy commitments and operation plans established by NWREL. (Submission objectives involving education concerned groups.)

A. The Regional Laboratory will provide the management, design, and evaluation expertise for the identification, specification, and behavioral definition of competencies for generic process skills; for the design of initially proposed generic process instructional systems for professional educators; for the initial evaluation and revision of stated instructional systems

B. The Regional Laboratory will achieve the completion of the above stated functions with the collaboration of existing qualified personnel within the Northwest region

C. The Regional Laboratory will establish and direct the initial training programs during the design and validation process. Once it is possible to provide an operational instructional system meeting prestated terminal performance objectives, the Laboratory will produce qualified instructional leaders (where required) through the initial programs who will then assume the responsibility for future implementation of these programs. These leaders will come from the five states involved. Additional leaders will be produced by "local talent" who have been produced through initial programs run by (in collaboration) the Laboratory

D. The specific objective of Program 100 is to initiate the programmatic action effort, phasing out of direct responsibility as qualified professionals are developed within the Northwest region (in each of five states) with demonstrated competencies for implementing quality assured training programs

E. A high time priority will exist for the development of the system analysis/synthesis instructional system in order that a sufficient number of skilled professionals will be available in each of the five states to establish the required leadership in the planning, design, implementation, and evaluation of action efforts to achieve the submission objectives for Subsystem I (Involvement) including:

1. A regional or subregional sensing and planning network for assuring and defining change requirements

2. A regional or subregional evaluation task force for assessing and maintaining quality assurance of instructional systems when implemented for established criteria for "leader" certification; etc.

3. A regional or subregional task(s) forces who will have developed competencies in designing, producing, evaluating and disseminating established instructional systems. The requirement will exist very soon to include a broad scope of professionals (who are qualified) in a collaborative instructional system design effort with the Laboratory. As soon as feasible, the major design, implementation and dissemination effort will be turned over to this task force(s)

4. The primary action effect of Program 100 relates to the development of teacher competencies in the application of generic processes which achieve defined teacher behavioral outcomes. However, it will be necessary to involve administrative/management leadership at all levels in order to achieve the stated subobjectives for the Regional Involvement Subsystem (I). This will require an Operation PEP type of program for these leaders in order to provide them skills and knowledge in management planning to evaluate, agree with, and establish action effects to develop self-directed management task forces to achieve the stated regional involvement objectives (also legislative leaders should be involved)

5. The "turning-over" process for regional personnel from the Laboratory in terms of management functions, design functions, implementation and dissemination functions, and system evaluation functions must be clearly defined and understood by regional personnel in advance. Included is the understanding of financial support requirements for carrying on the program on

an ever increasing basis over the ten-year period. This plan will require a statement of progressive milestones to be achieved by the consortium representing such events as:

a. Providing skills training programs in system planning meeting stated submission objectives

b. Guided and monitored application of system methods for setting up designated management groups for planned change, sensing, evaluation, instructional system implementation and dissemination, and certification

c. Implementation of action efforts by the regional task force with aid from the Laboratory

d. Systematic withdrawal of Laboratory direction and support consistent with demonstrated competencies by designated task force groups, and expressed self-confidence to assure greater responsibility for continued leadership in implementing program objectives by 1977

e. An indepth need assessment program will be required in order to identify, assess, and weight

    (1) Existing negative forces within states, regions, and so forth, who will resist or negate proposed changes

    (2) Existing positive forces within states, regions, and so forth, who will support or push proposed changes

    (3) Existing legal restrictions and required changes

    (4) A "picking-order" of participants in influential positives at all levels

    (5) Appropriate strategies for achieving behavioral changes appropriate to achievement of stated submission objectives (Subsystem I - Involvement) including considerations such as:

- (a) Priority of contacts and confrontations
- (b) Priority of involvements
- (c) Stated responses desired and stimulate to be presented
- (d) Timing considerations
- (e) Sequenced events to be achieved and alternate strategies to be implemented if desired response not elicited
- (f) Degree and extent of "visibility" desired for Laboratory as a function of time, degree of involvement
- (g) Degree and rate of withdrawal based on prestated performance by Northwest regional participant

Part II - Relating to Dissemination

I. Design for Communicating an Overview Understanding of NWREL and Program 100

A. Content of the Communication

1. About the Laboratory (tape, slide presentation - purpose, organization, programs, etc.)

2. Program 100 - what is the focus skills for teachers

   a. What is the focus

      - (1) Needs of the region (as per task force survey) as expressed by people in the region
      - (2) Generic process skills (GPS)
      - (3) Benefits of GPS and as experienced by teacher trainers and their pupils (tape)
      - (4) Overview of skill areas

        (5) Illustrations of specifics of the (inquiry) instructional systems

        (6) Evaluative reactions (tape)

        (7) Increased decision making ability of teacher

    b. The Laboratory's Program 100 role in developing instructional systems

        (1) Development within research development and dissemination

        (2) Six phases of developing an activity and the outcomes

        (3) Carried on by ad hoc team based in the region

        (4) Eventual integration into five continuous sequences of learning

        (5) Development workshops to date

3. Linkage to dissemination institutions

    a. Kinds of institutions that provide teacher training

    b. Need for "you" to be making long-range plans (issues especially relevant to particular populations should be included here)

    c. Feedback to Laboratory (alternative possible designs needed here)

4. Implications to education

    a. Using the new technology to bring about desired changes versus being changed by the new technology

    b. Teachers as professional decision-makers and continuous learners

    c. Learners who are learning how to learn and becoming creative individuals

B. Procedures and materials (tape-slide plus alternatives for A.2.a.(5) and A.3.b. and c.)

C. Targets for overview communication

  1. Higher education faculties

  2. School district administrators

  3. School faculties

  4. Appropriate State Department of Education personnel

  5. Accreditation agencies

  6. State professional associations

  7. State legislatures

  8. Funding sources

  9. School boards

II. Design for Involving Trainees

  A. Entry package for trainees

  B. Administrators' training package

III. Design for Supportively Collaborating With Trainer Institutions and State Departments of Education

  A. Creating a shared design for linkage between the Laboratory's developmental function and other institutions' dissemination functions, (State Department of Education, Higher Education, Districts, Title III Centers, E.A., I.E.D., Accreditation Agencies)

    1. Action steps

      a. Identify key people in each state to meet with (to consider overview of dissemination strategy and kinds of involvement meetings needed)

      b. Meet with key people

        - c. Hold involvement meetings of large representative groups
        - d. Identify and plan next action steps to implement outcomes of the meetings
    - 2. Content of meetings
        - a. Overview of R, D and D process
            - (1) Laboratory purpose and function of development
            - (2) Program 100 purpose, focus, procedures, outcomes
        - b. Issue of linkage between development and dissemination
            - (1) Avoid overlap and conflict
            - (2) Shared expectations of timing and responsibilities
            - (3) Three types of training designs
            - (4) Collaborative coordinating roles
            - (5) Who to involve in developmental activities - trainees, trainers, trainers of trainers, developers
        - c. Plan for support in seeking funding
        - d. Materials and design of activities in these meetings to maximize involvement
        - e. Competencies of instructional leaders and criteria for acceptability for course credit instructors
- B. Laboratory's part in coordinating dissemination (move from providing coordination to coordinated collaboration)
    - 1. Communicating the overview
    - 2. Involving local settings in developmental training sessions

        a. Conducting them

        b. Being trainees

    3. Bringing institutions together

        a. To carry out training together

        b. To involve them in planning for more long-range involvement in this R, D and D model

        c. To coordinate local coordination into a regional design

        d. To seek funding

    4. Stimulate taking action steps

    5. Provide skills training for local coordinators who can support intra and interinstitutional linkage, e.g., Education Training Consultants

    6. Building the mechanisms for resource retrieval, e.g., trainers, materials, models for collaboration, trainers of trainers, developers

    7. Communicating relevant evaluation and research information, e.g., findings, evaluation procedures

    8. Special projects to inform the region, e.g., Simon's E.A. model of temporary roving communication teams

C. Seeking funding

    1. Clarify with institutions their differential funding needs to be active in training and linkage

    2. Clarify funding needs of Laboratory to help coordinate dissemination

    3. Special projects support, e.g., Simon's E.A. model

    4. Consortia to support training, e.g., Title III, Title I, E.P.D.A.

5. Explore funding possibilities with sources, e.g., Davies, Wickline, Ford, Kettering
6. Explore possible local generation of funds
7. Laboratory provides training in skills of proposal writing
8. Laboratory help in proposal writing
9. Plan action steps to implement any specifics related to above resulting from meetings with other institutions

D. Materials and mechanics for involvement

1. Laboratory overview (film-slide showing)
2. Overview of R, D and D process
3. Overview of Program 100 (tape-slide showing)
4. Handouts regarding specifics of Laboratory and Program 100
    a. Program 100 overview brochure
    b. Activity fact sheets
    c. Programmatic statement elements, e.g., program phasing chart linkage needs and possibilities, projections of fund needs to region
    d. Projections of timing
5. Overhead projector transparencies (to complement (4) above)
6. Rewrites of (sections of) the programmatic statement
7. Recorded reactions of trainees
8. Confrontation materials and designs speaking to personalized awareness of needs and issues
9. Illustrations of three types of training designs

    10. Micro and macro designs for meetings
    11. Statement of dissemination strategy

IV. Need a design for relating involvements of people in developmental workshops of the Laboratory to creating a base for dissemination

- A. Visibility of training (skills areas) by virtue of school district selections
- B. Location of potential instructional leaders
- C. Location of persons with increased understanding of, and skills in, developmental work
- D. Criteria for inclusions based on potential for continuity
- E. Location of developers

V. Need a design for supporting the integration of Program 100 products into preservice teacher training--includes credit granted for demonstration of competencies

VI. Need a design for relating to extraregional dissemination

SUPPLEMENT C

Partial System Analysis of Program 100

PROGRAM ANALYSIS

Mission Objective

To plan, design, implement and evaluate a programmatic action effort to involve education concerned groups of the Northwest region in assuming responsibility by 1977 for continuously identifying, developing and disseminating viable and feasible instructional systems which will produce predictable generic process skills competencies in those who apply them in learning programs which achieve defined learner behavioral outcomes which the learners will continuously increase and apply in being responsive to ever changing "real-world" needs requirements for survival growth and development, and to simultaneously conduct a series of basic research studies related to this programmatic effort.

(This analysis was performed by Charles Jung and John Picton with the consultation of Robert and Betty Corrigan.)

CHART VII

PROGRAM 100 ANALYSIS

Mission Profile

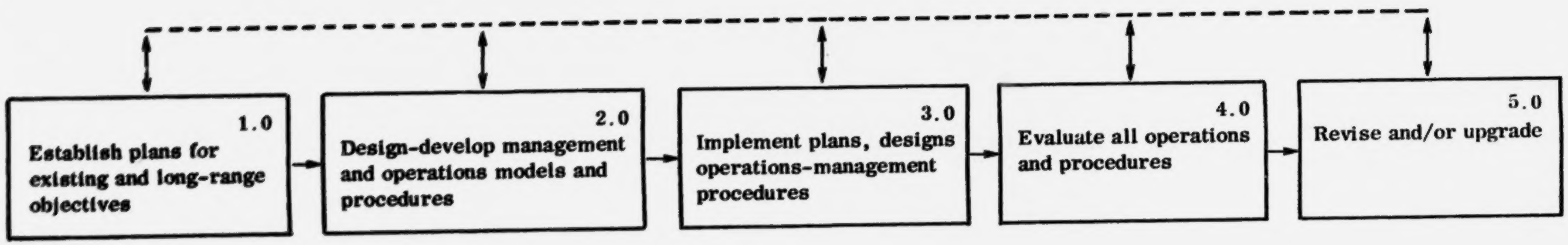

1.0
Establish plans for existing and long-range objectives
2.0
Design-develop management and operations models and procedures
3.0
Implement plans, designs operations-management procedures
4.0
Evaluate all operations and procedures
5.0
Revise and/or upgrade

CHART VIII

PROGRAM 100 ANALYSIS

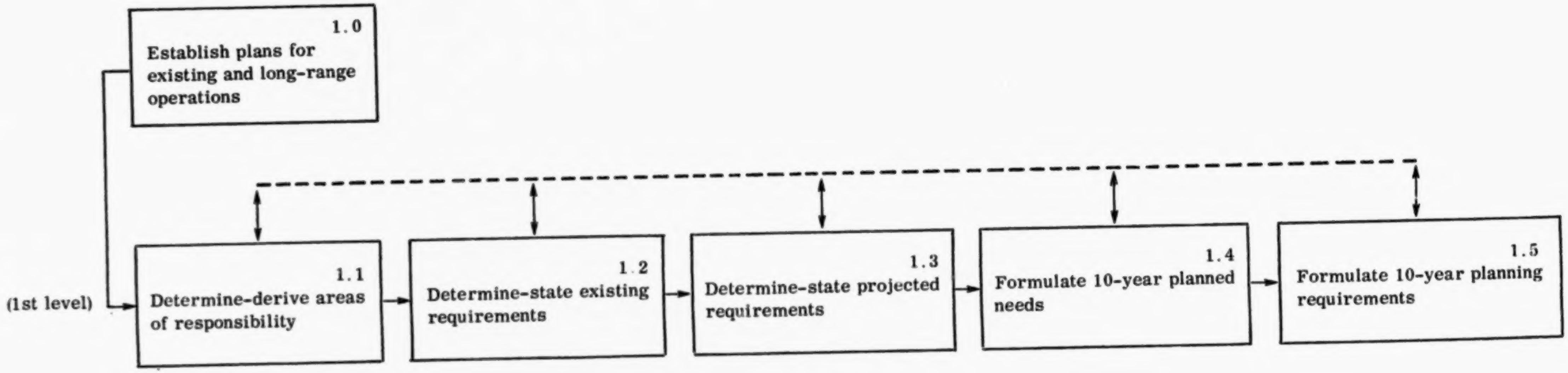

Functional Analysis
1.0
Establish plans for existing and long-range operations
(1st level)
1.1
Determine-derive areas of responsibility
1.2
Determine-state existing requirements
1.3
Determine-state projected requirements
1.4
Formulate 10-year planned needs
1.5
Formulate 10-year planning requirements

CHART IX

PROGRAM 100 ANALYSIS

Functional Analysis

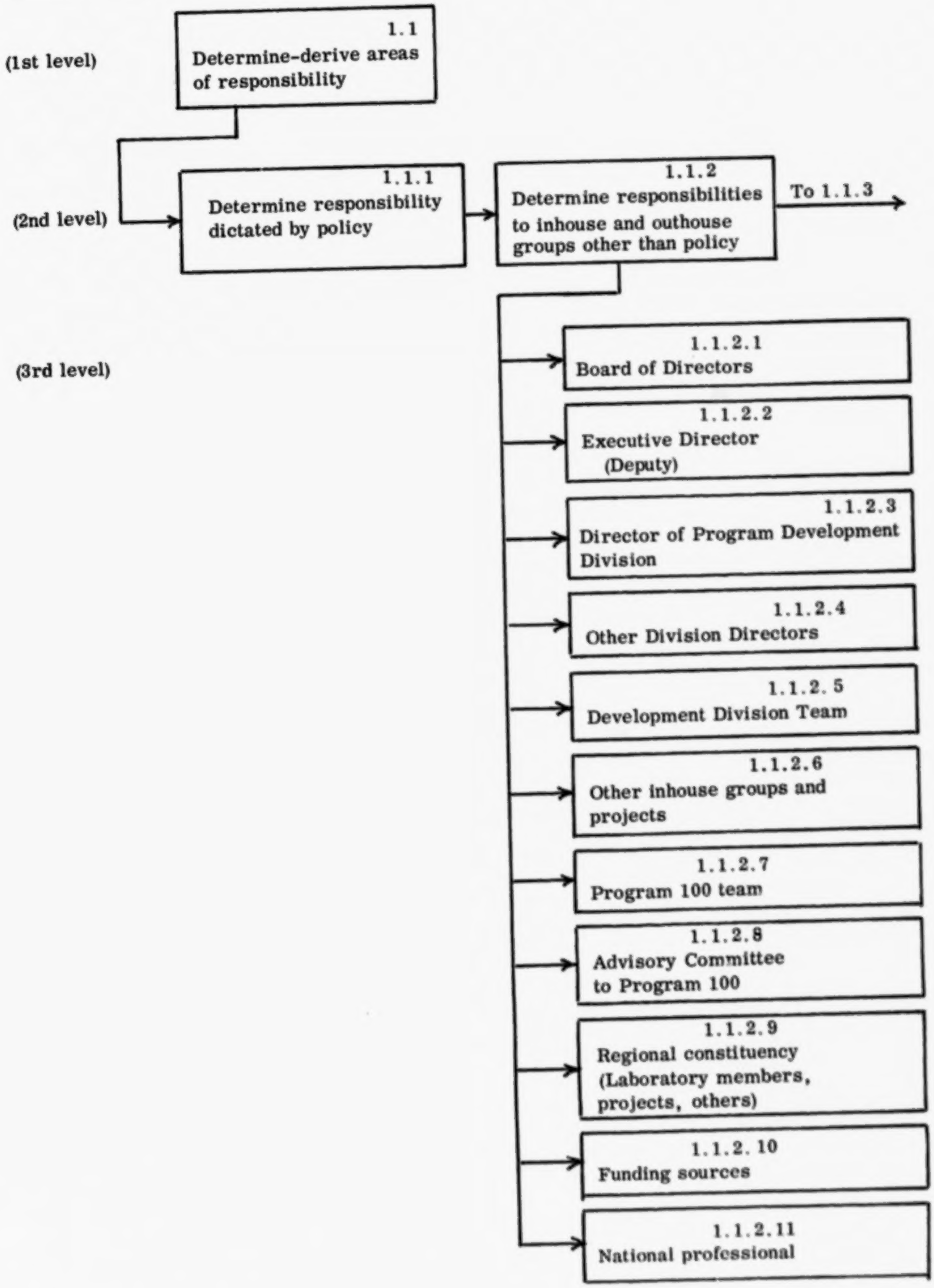

(1st level)
1.1 Determine-derive areas of responsibility
(2nd level)
1.1.1 Determine responsibility dictated by policy
1.1.2 Determine responsibilities to inhouse and outhouse groups other than policy
To 1.1.3
(3rd level)
1.1.2.1 Board of Directors
1.1.2.2 Executive Director (Deputy)
1.1.2.3 Director of Program Development Division
1.1.2.4 Other Division Directors
1.1.2. 5 Development Division Team
1.1.2.6 Other inhouse groups and projects
1.1.2.7 Program 100 team
1.1.2.8 Advisory Committee to Program 100
1.1.2.9 Regional constituency (Laboratory members, projects, others)
1.1.2. 10 Funding sources
1.1.2.11 National professional

CHART X

PROGRAM 100 ANALYSIS

Functional Analysis

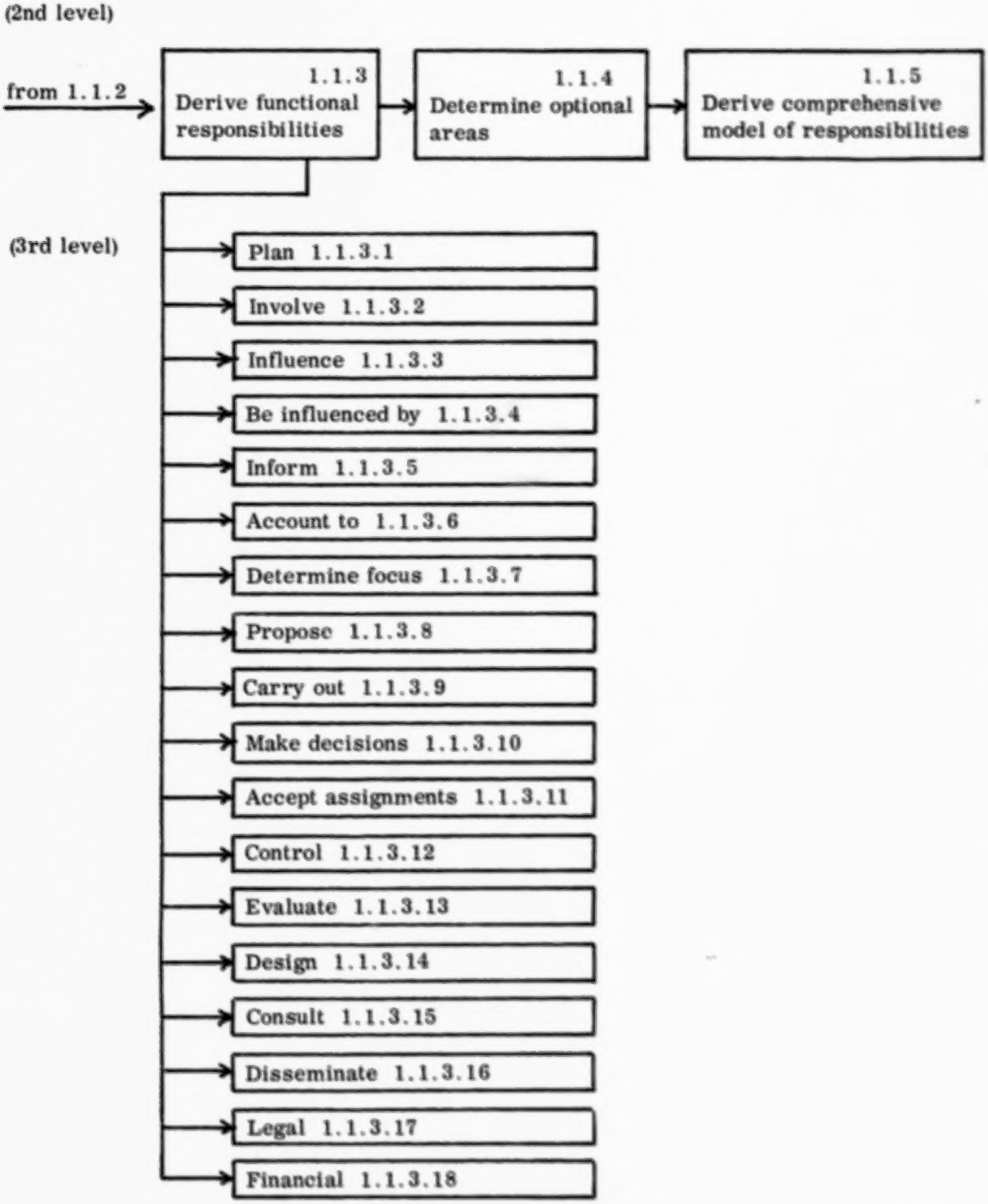


CHART XI

PROGRAM 100 ANALYSIS

Functional Analysis

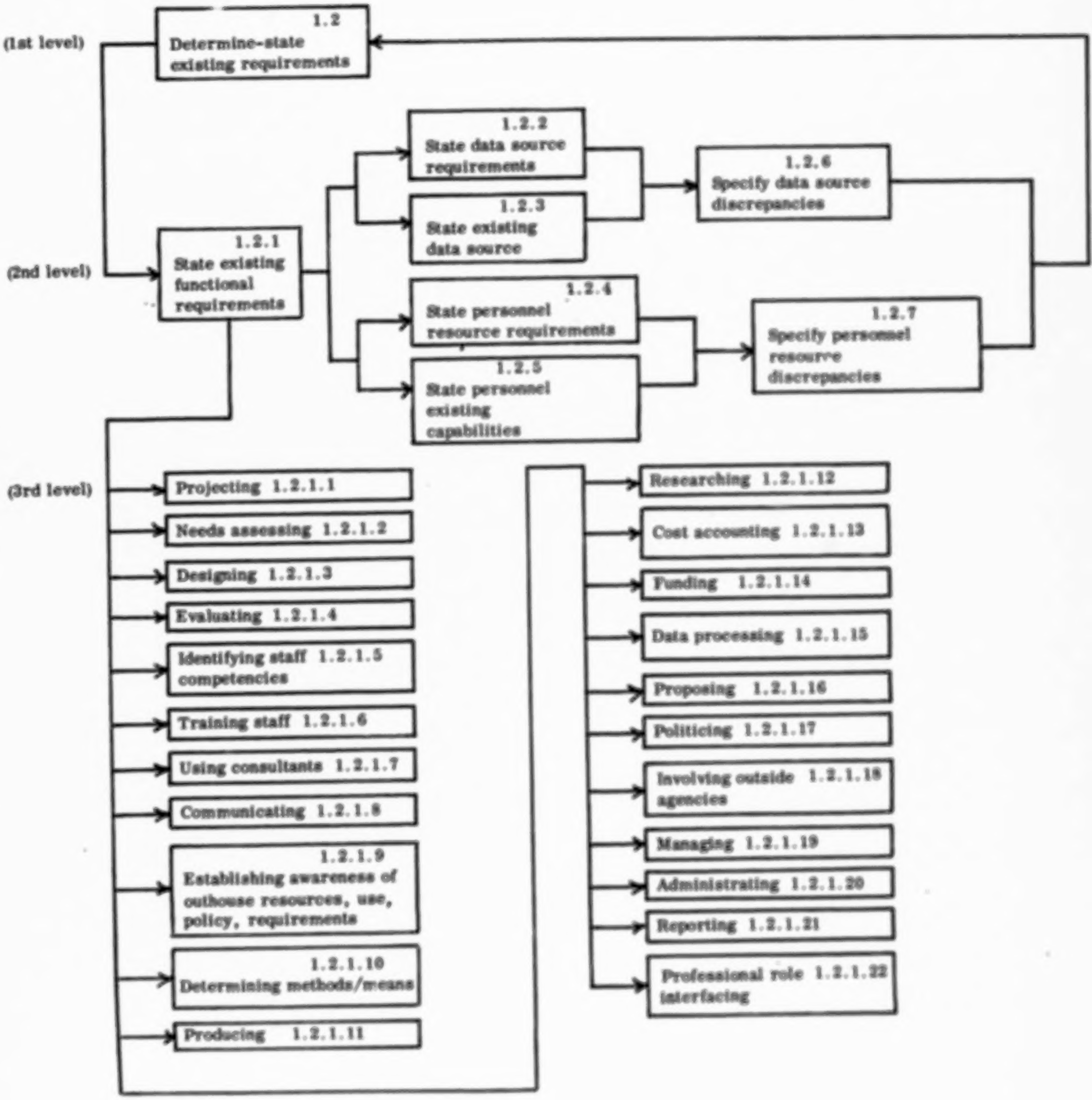

(1st level)
1.2 Determine-state existing requirements
(2nd level)
1.2.1 State existing functional requirements
1.2.2 State data source requirements
1.2.3 State existing data source
1.2.4 State personnel resource requirements
1.2.5 State personnel existing capabilities
1.2.6 Specify data source discrepancies
1.2.7 Specify personnel resource discrepancies
(3rd level)
Projecting 1.2.1.1
Needs assessing 1.2.1.2
Designing 1.2.1.3
Evaluating 1.2.1.4
Identifying staff competencies 1.2.1.5
Training staff 1.2.1.6
Using consultants 1.2.1.7
Communicating 1.2.1.8
1.2.1.9 Establishing awareness of outhouse resources, use, policy, requirements
1.2.1.10 Determining methods/means
Producing 1.2.1.11
Researching 1.2.1.12
Cost accounting 1.2.1.13
Funding 1.2.1.14
Data processing 1.2.1.15
Proposing 1.2.1.16
Politicing 1.2.1.17
Involving outside agencies 1.2.1.18
Managing 1.2.1.19
Administrating 1.2.1.20
Reporting 1.2.1.21
Professional role interfacing 1.2.1.22

CHART XII

PROGRAM 100 ANALYSIS

Functional Analysis

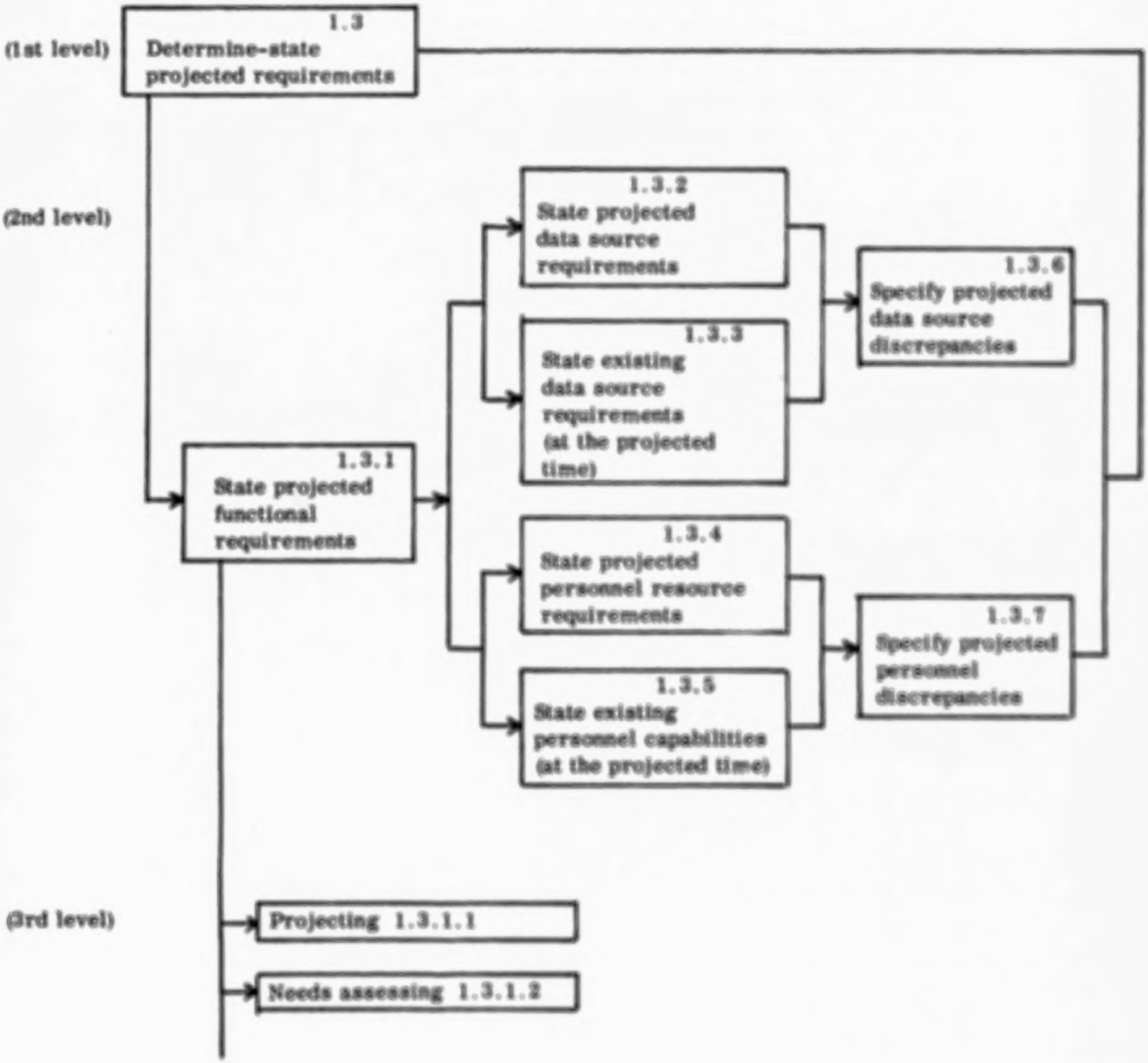

(1st level)
1.3
Determine-state projected requirements
(2nd level)
1.3.1
State projected functional requirements
1.3.2
State projected data source requirements
1.3.3
State existing data source requirements (at the projected time)
1.3.4
State projected personnel resource requirements
1.3.5
State existing personnel capabilities (at the projected time)
1.3.6
Specify projected data source discrepancies
1.3.7
Specify projected personnel discrepancies
(3rd level)
Projecting 1.3.1.1
Needs assessing 1.3.1.2
(etc.)

CHART XIII

PROGRAM 100 ANALYSIS

Functional Analysis

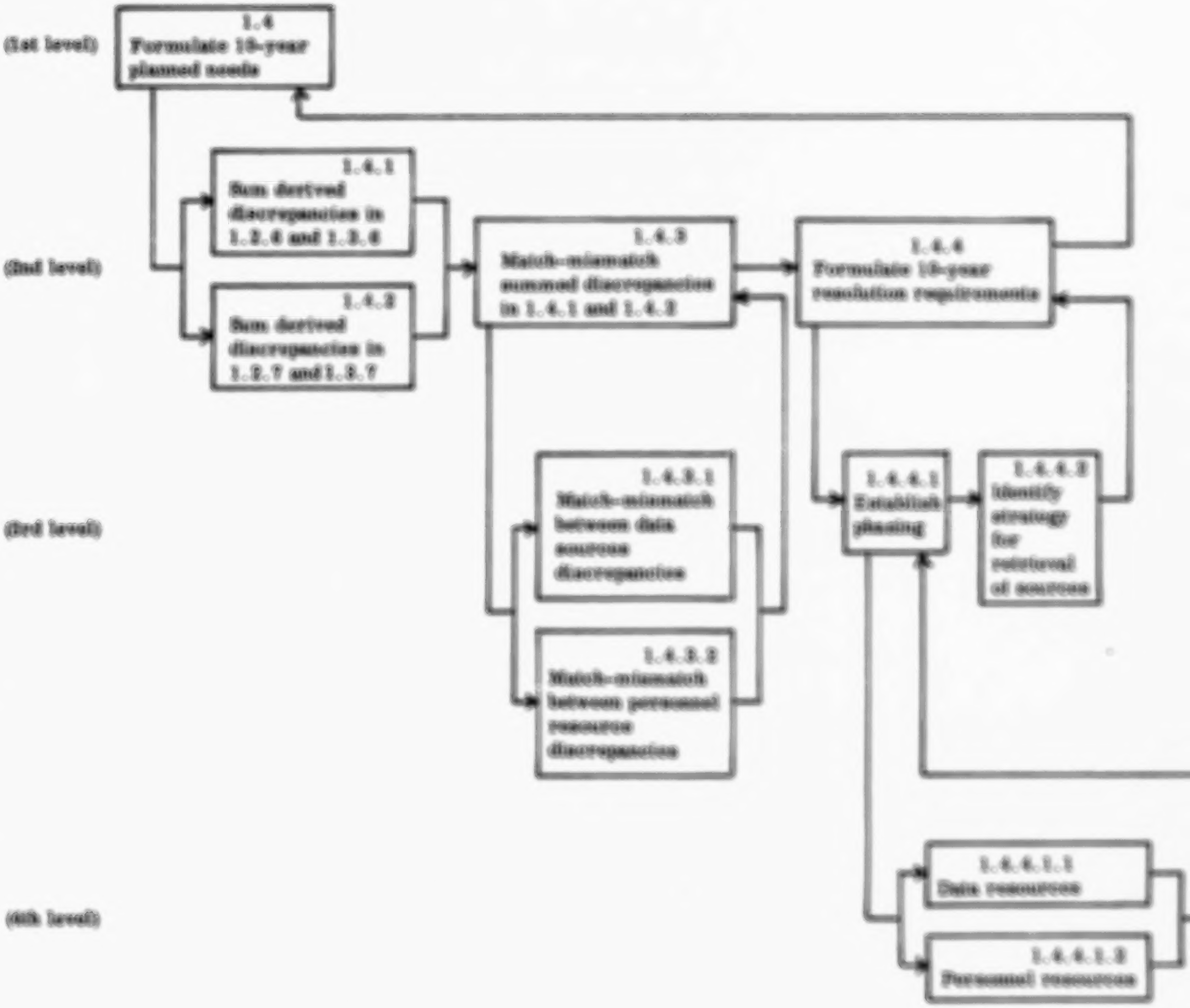

(1st level)
1.4 Formulate 10-year planned needs
(2nd level)
1.4.1 Sum derived discrepancies in 1.2.6 and 1.3.6
1.4.2 Sum derived discrepancies in 1.2.7 and 1.3.7
1.4.3 Match-mismatch summed discrepancies in 1.4.1 and 1.4.2
1.4.4 Formulate 10-year resolution requirements
(3rd level)
1.4.3.1 Match-mismatch between data sources discrepancies
1.4.3.2 Match-mismatch between personnel resources discrepancies
1.4.4.1 Establish phasing
1.4.4.2 Identify strategy for retrieval of sources
(4th level)
1.4.4.1.1 Data resources
1.4.4.1.2 Personnel resources

CHART XIV

PROGRAM 100 ANALYSIS

Functional Analysis

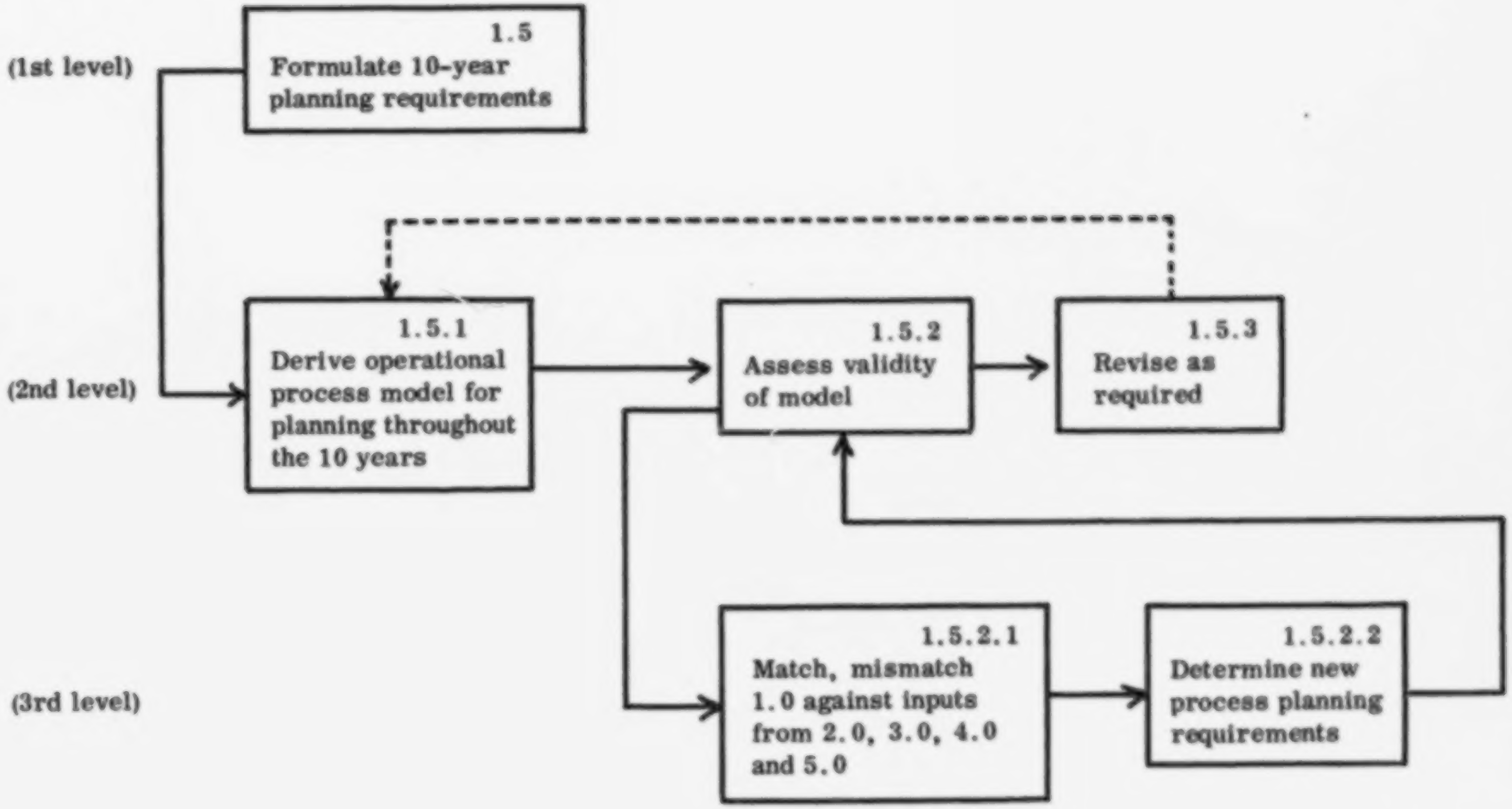

(1st level)
1.5
Formulate 10-year planning requirements
(2nd level)
1.5.1
Derive operational process model for planning throughout the 10 years
1.5.2
Assess validity of model
1.5.3
Revise as required
(3rd level)
1.5.2.1
Match, mismatch 1.0 against inputs from 2.0, 3.0, 4.0 and 5.0
1.5.2.2
Determine new process planning requirements

CHART XV

PROGRAM 100 ANALYSIS

Functional Analysis

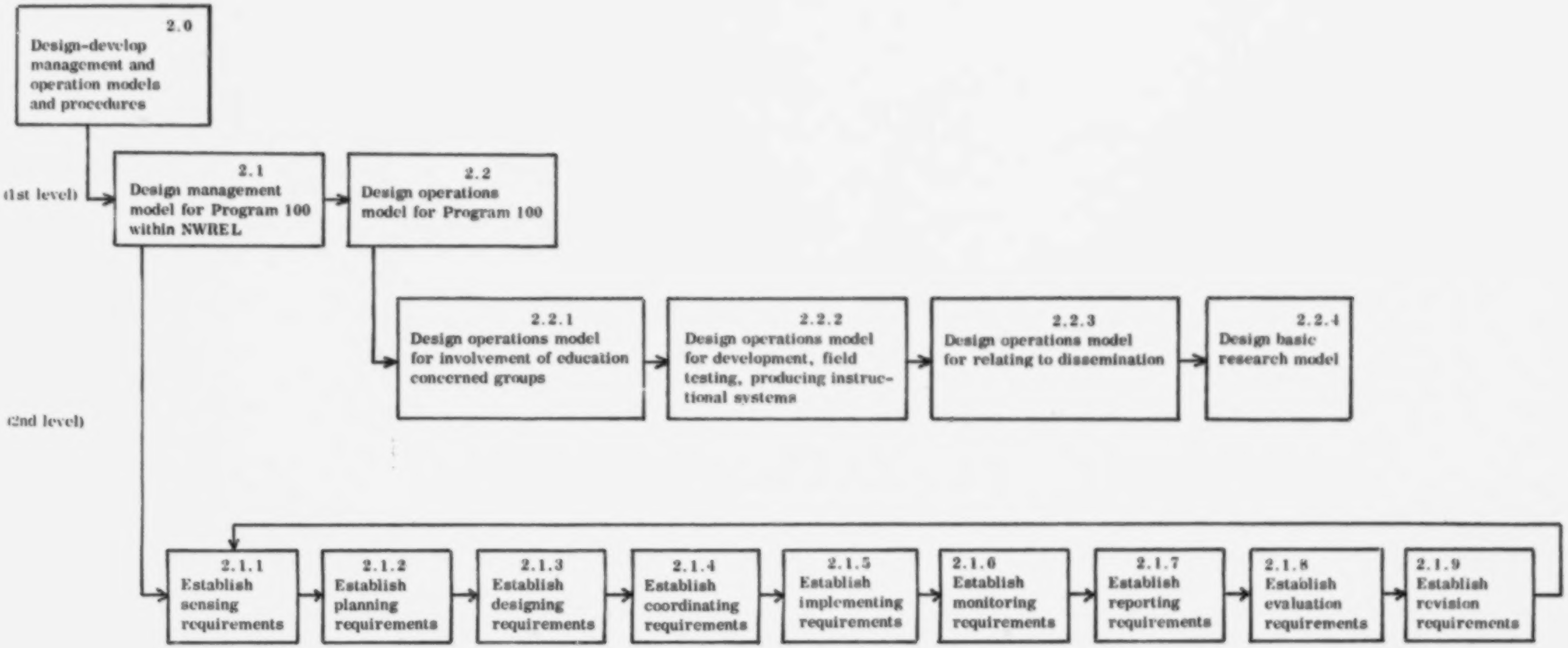

2.0
Design-develop management and operation models and procedures
(1st level)
2.1
Design management model for Program 100 within NWREL
2.2
Design operations model for Program 100
2.2.1
Design operations model for involvement of education concerned groups
2.2.2
Design operations model for development, field testing, producing instructional systems
2.2.3
Design operations model for relating to dissemination
2.2.4
Design basic research model
(2nd level)
2.1.1
Establish sensing requirements
2.1.2
Establish planning requirements
2.1.3
Establish designing requirements
2.1.4
Establish coordinating requirements
2.1.5
Establish implementing requirements
2.1.6
Establish monitoring requirements
2.1.7
Establish reporting requirements
2.1.8
Establish evaluation requirements
2.1.9
Establish revision requirements

CHART XVI

PROGRAM 100 ANALYSIS

Functional Analysis

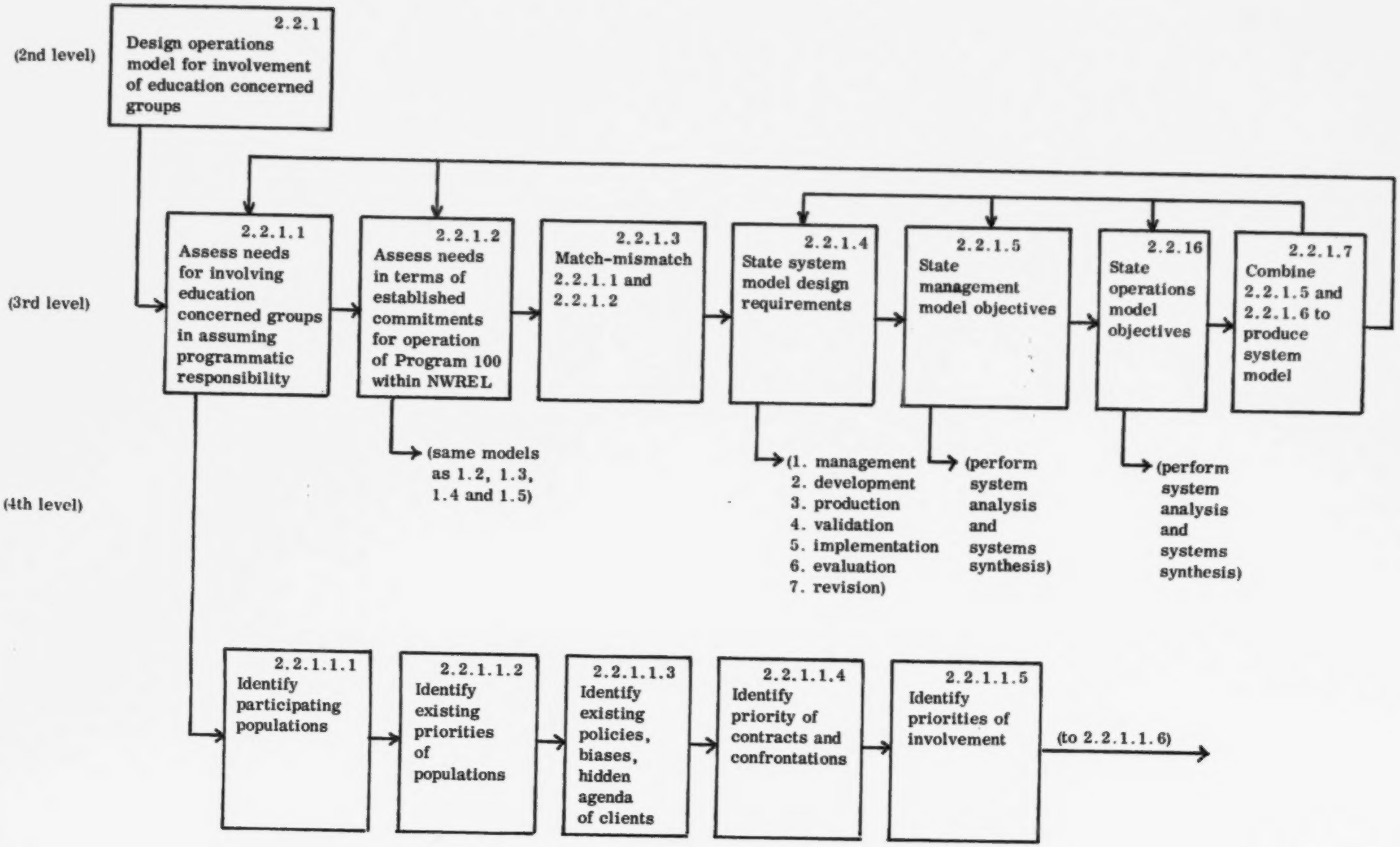

(2nd level)
2.2.1
Design operations model for involvement of education concerned groups
(3rd level)
2.2.1.1
Assess needs for involving education concerned groups in assuming programmatic responsibility
2.2.1.2
Assess needs in terms of established commitments for operation of Program 100 within NWREL
2.2.1.3
Match-mismatch 2.2.1.1 and 2.2.1.2
2.2.1.4
State system model design requirements
2.2.1.5
State management model objectives
2.2.16
State operations model objectives
2.2.1.7
Combine 2.2.1.5 and 2.2.1.6 to produce system model
(4th level)
(same models as 1.2, 1.3, 1.4 and 1.5)
(1. management
2. development
3. production
4. validation
5. implementation
6. evaluation
7. revision)
(perform system analysis and systems synthesis)
(perform system analysis and systems synthesis)
2.2.1.1.1
Identify participating populations
2.2.1.1.2
Identify existing priorities of populations
2.2.1.1.3
Identify existing policies, biases, hidden agenda of clients
2.2.1.1.4
Identify priority of contracts and confrontations
2.2.1.1.5
Identify priorities of involvement
(to 2.2.1.1.6)

CHART XVII

PROGRAM 100 ANALYSIS

Functional Analysis

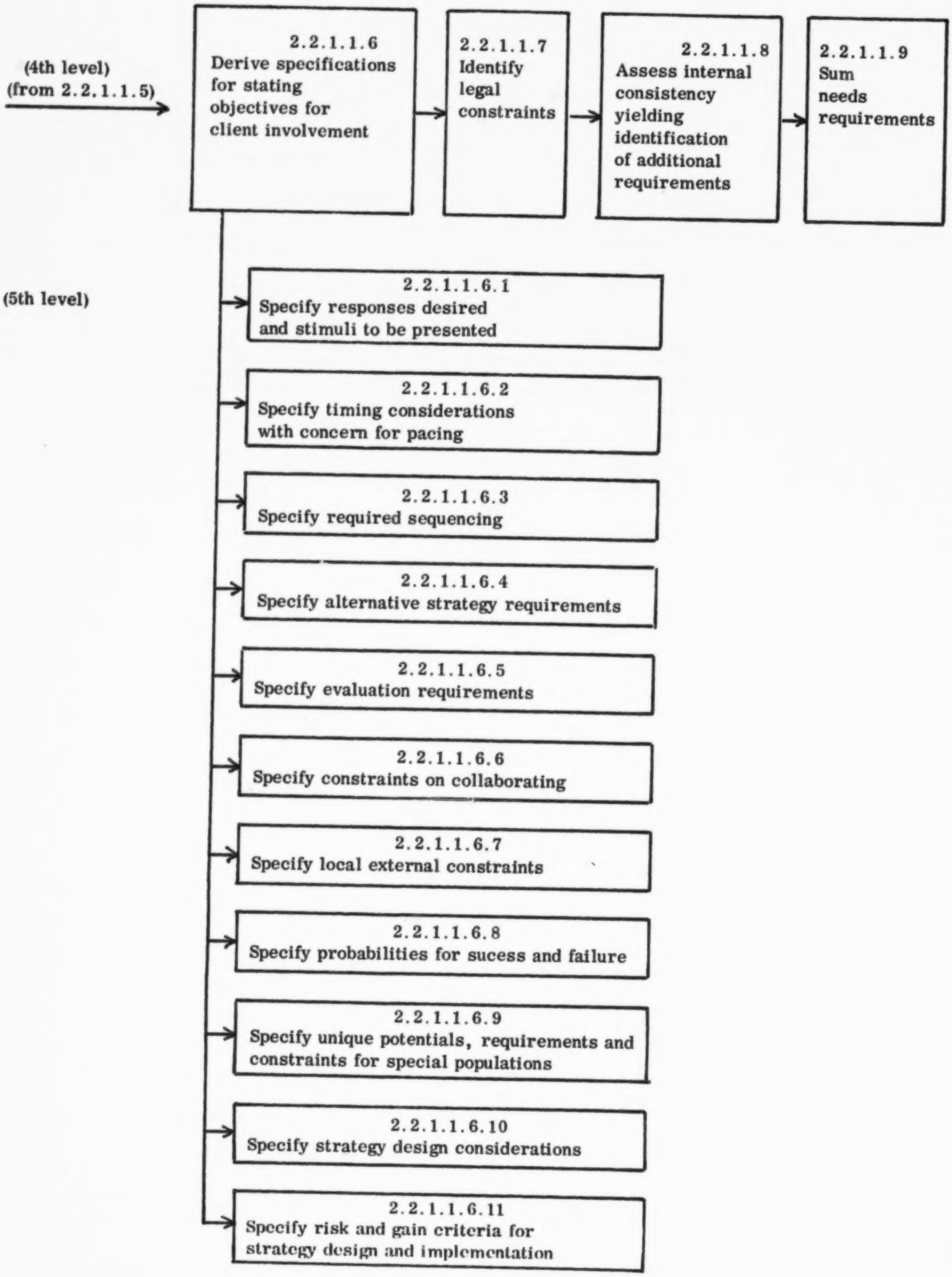

(4th level)
(from 2.2.1.1.5)
2.2.1.1.6 Derive specifications for stating objectives for client involvement
2.2.1.1.7 Identify legal constraints
2.2.1.1.8 Assess internal consistency yielding identification of additional requirements
2.2.1.1.9 Sum needs requirements
(5th level)
2.2.1.1.6.1 Specify responses desired and stimuli to be presented
2.2.1.1.6.2 Specify timing considerations with concern for pacing
2.2.1.1.6.3 Specify required sequencing
2.2.1.1.6.4 Specify alternative strategy requirements
2.2.1.1.6.5 Specify evaluation requirements
2.2.1.1.6.6 Specify constraints on collaborating
2.2.1.1.6.7 Specify local external constraints
2.2.1.1.6.8 Specify probabilities for sucess and failure
2.2.1.1.6.9 Specify unique potentials, requirements and constraints for special populations
2.2.1.1.6.10 Specify strategy design considerations
2.2.1.1.6.11 Specify risk and gain criteria for strategy design and implementation

CHART XVIII

PROGRAM 100 ANALYSIS

Functional Analysis

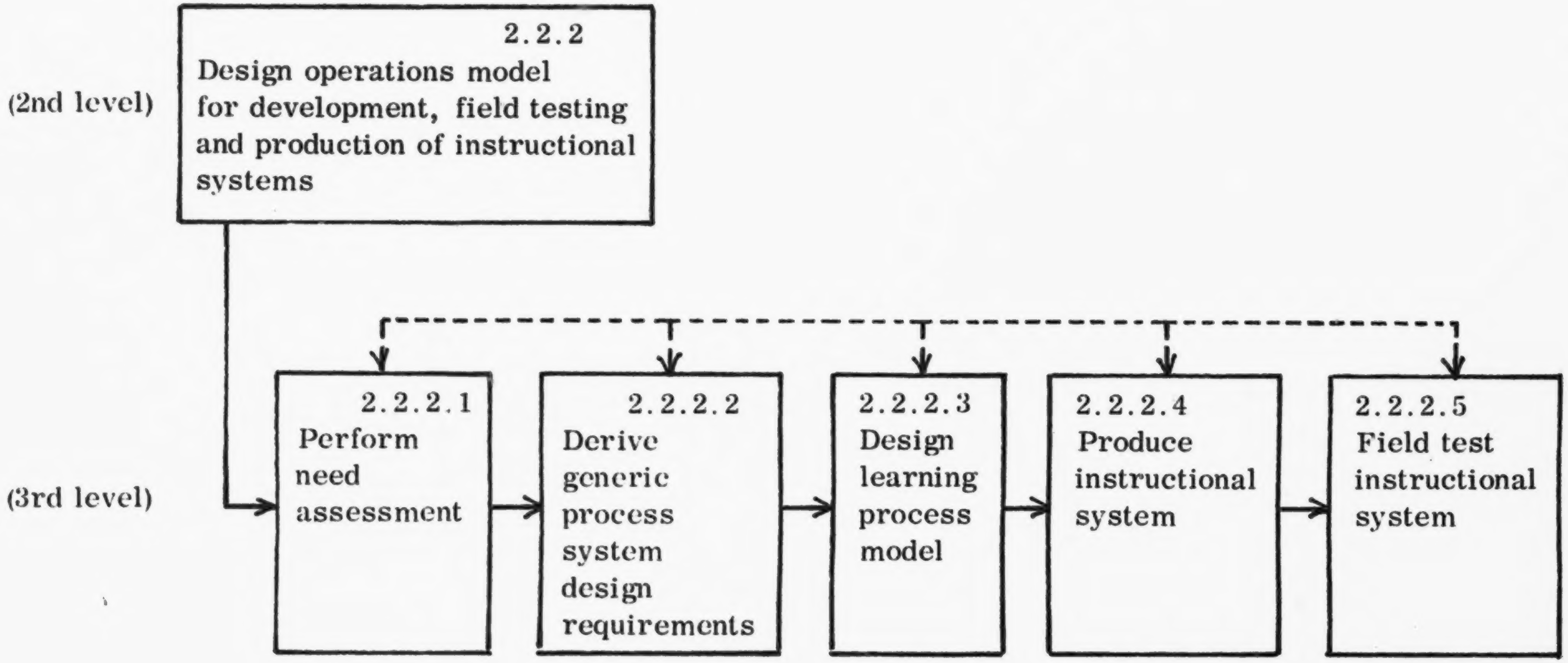

(2nd level)
2.2.2
Design operations model for development, field testing and production of instructional systems
(3rd level)
2.2.2.1
Perform need assessment
2.2.2.2
Derive generic process system design requirements
2.2.2.3
Design learning process model
2.2.2.4
Produce instructional system
2.2.2.5
Field test instructional system

CHART XIX

PROGRAM 100 ANALYSIS

Functional Analysis

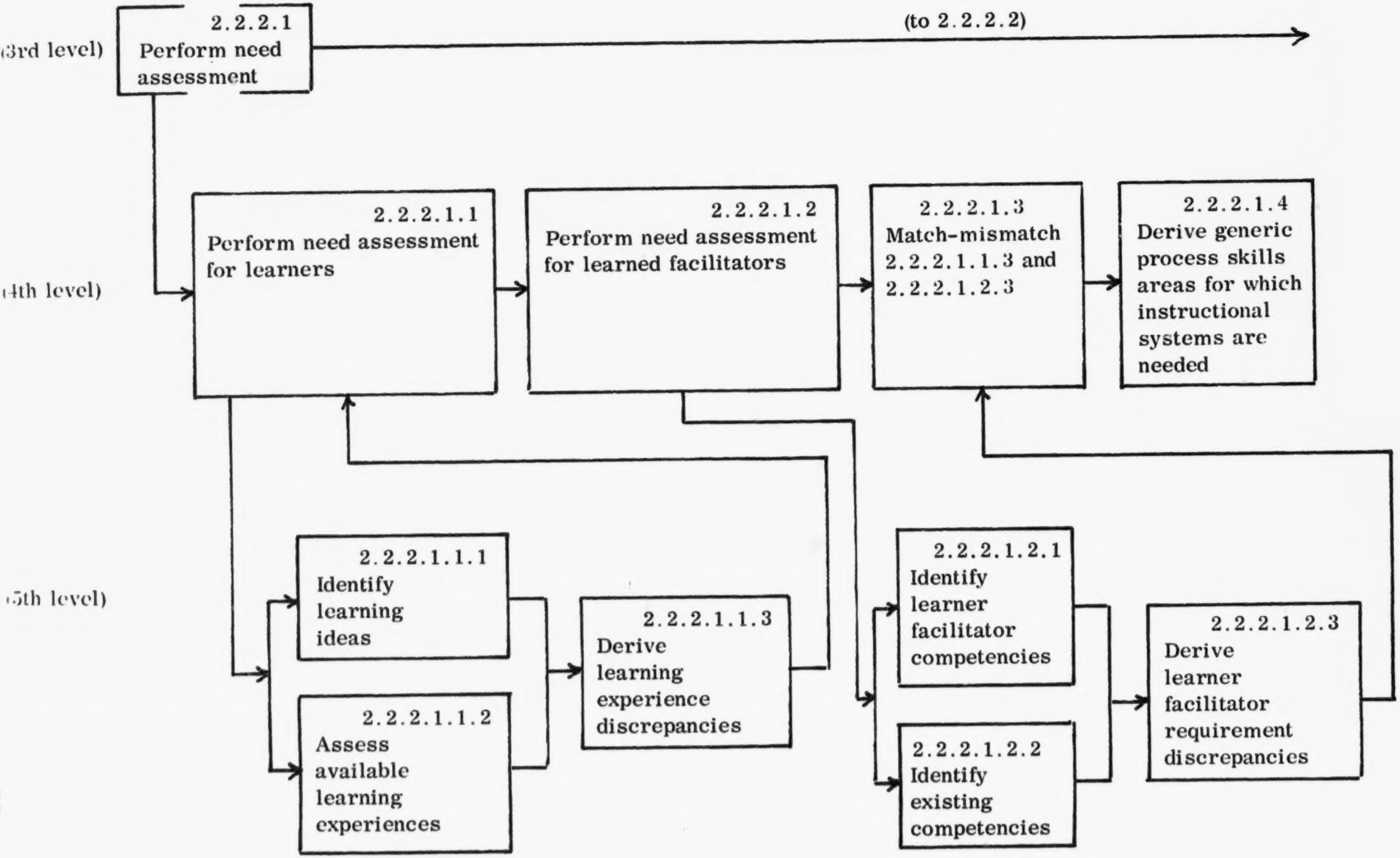

(3rd level)
(4th level)
(5th level)
2.2.2.1 Perform need assessment
(to 2.2.2.2)
2.2.2.1.1 Perform need assessment for learners
2.2.2.1.2 Perform need assessment for learned facilitators
2.2.2.1.3 Match-mismatch 2.2.2.1.1.3 and 2.2.2.1.2.3
2.2.2.1.4 Derive generic process skills areas for which instructional systems are needed
2.2.2.1.1.1 Identify learning ideas
2.2.2.1.1.2 Assess available learning experiences
2.2.2.1.1.3 Derive learning experience discrepancies
2.2.2.1.2.1 Identify learner facilitator competencies
2.2.2.1.2.2 Identify existing competencies
2.2.2.1.2.3 Derive learner facilitator requirement discrepancies

CHART XX

PROGRAM 100 ANALYSIS

Functional Analysis

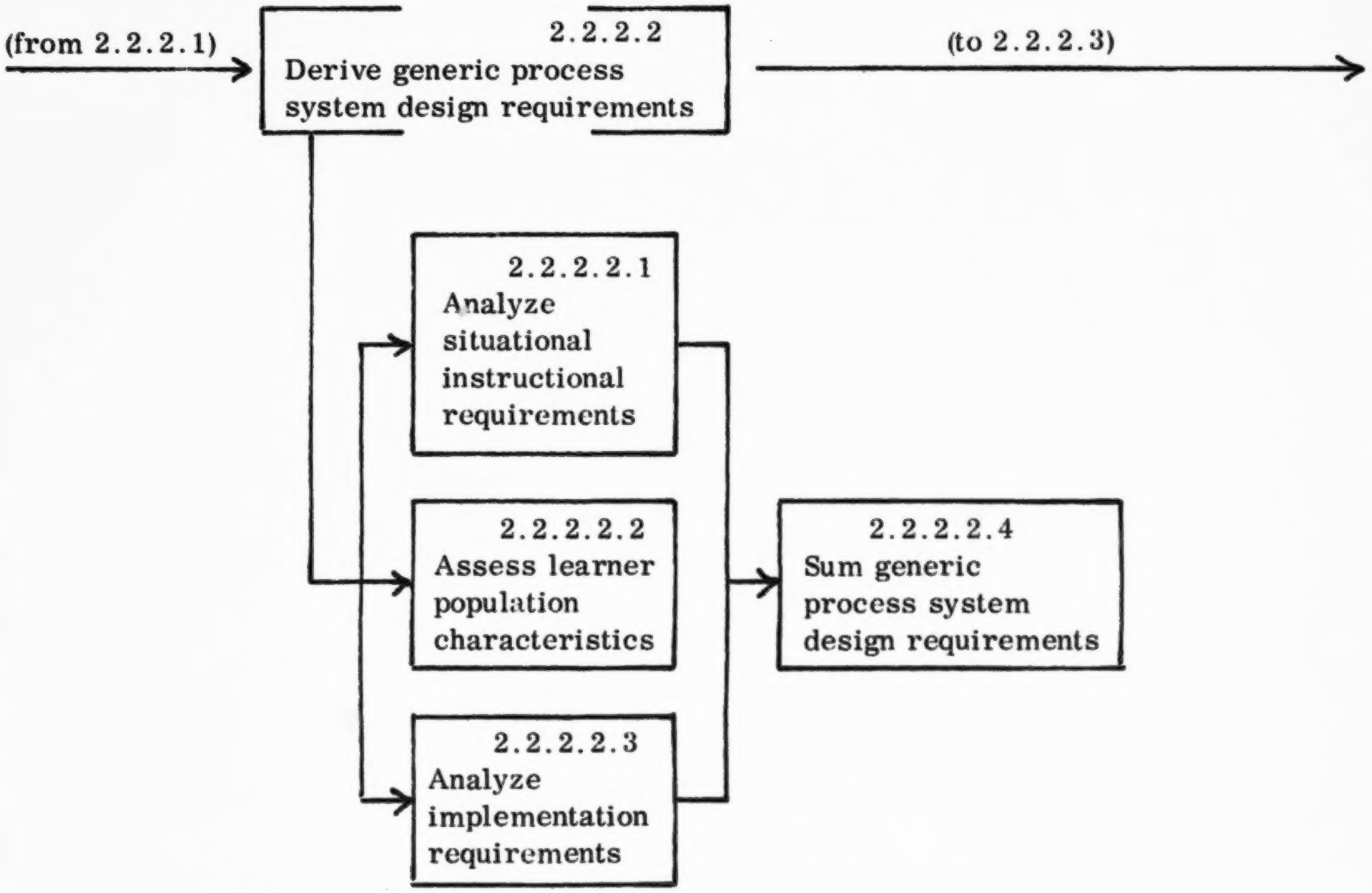

(from 2.2.2.1)
2.2.2.2
Derive generic process system design requirements
(to 2.2.2.3)
2.2.2.2.1
Analyze situational instructional requirements
2.2.2.2.2
Assess learner population characteristics
2.2.2.2.3
Analyze implementation requirements
2.2.2.2.4
Sum generic process system design requirements

CHART XXI

PROGRAM 100 ANALYSIS

Functional Analysis

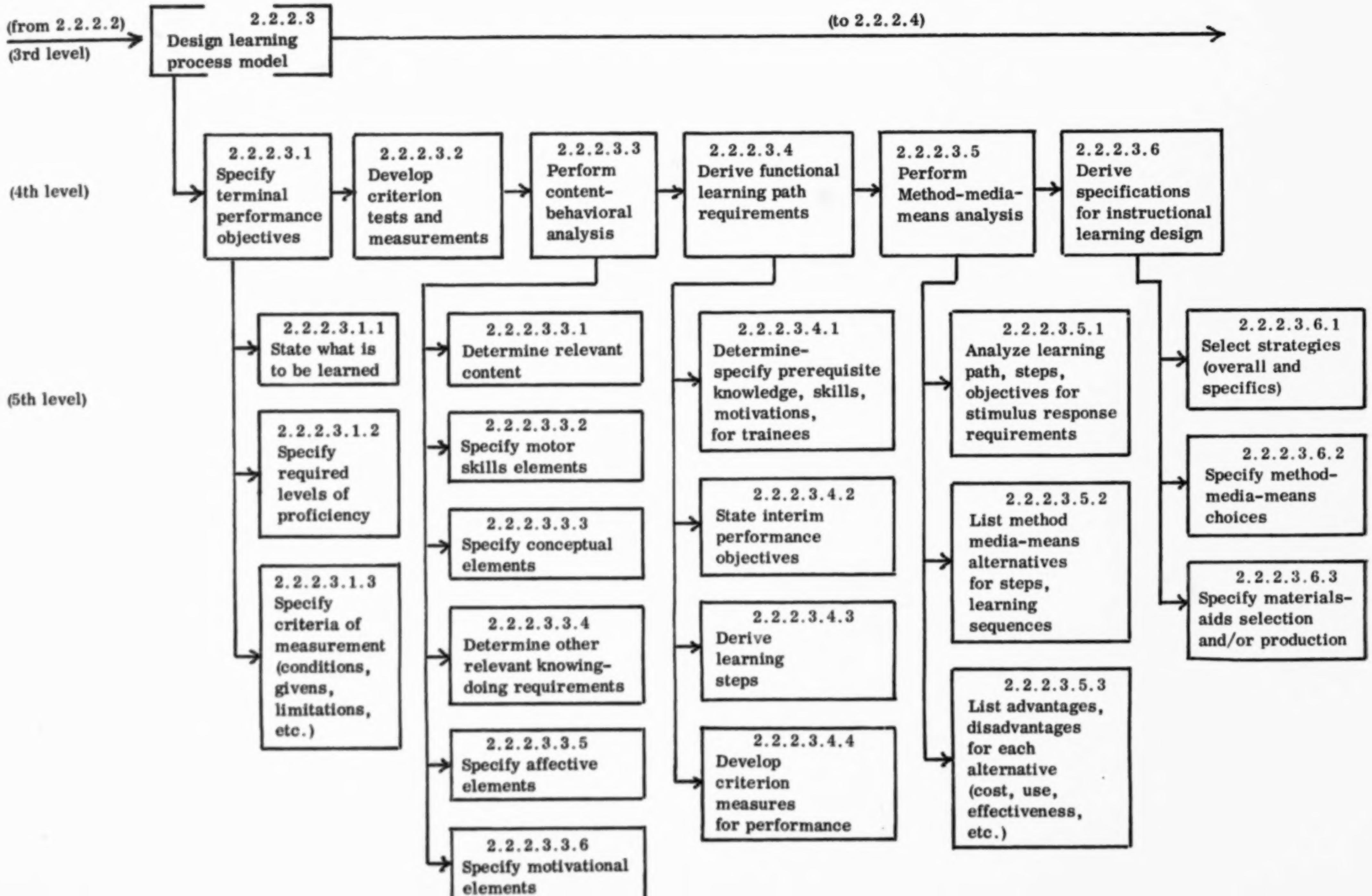

(from 2.2.2.2)
(3rd level)
2.2.2.3 Design learning process model
(to 2.2.2.4)
(4th level)
2.2.2.3.1 Specify terminal performance objectives
2.2.2.3.2 Develop criterion tests and measurements
2.2.2.3.3 Perform content-behavioral analysis
2.2.2.3.4 Derive functional learning path requirements
2.2.2.3.5 Perform Method-media-means analysis
2.2.2.3.6 Derive specifications for instructional learning design
(5th level)
2.2.2.3.1.1 State what is to be learned
2.2.2.3.1.2 Specify required levels of proficiency
2.2.2.3.1.3 Specify criteria of measurement (conditions, givens, limitations, etc.)
2.2.2.3.3.1 Determine relevant content
2.2.2.3.3.2 Specify motor skills elements
2.2.2.3.3.3 Specify conceptual elements
2.2.2.3.3.4 Determine other relevant knowing-doing requirements
2.2.2.3.3.5 Specify affective elements
2.2.2.3.3.6 Specify motivational elements
2.2.2.3.4.1 Determine-specify prerequisite knowledge, skills, motivations, for trainees
2.2.2.3.4.2 State interim performance objectives
2.2.2.3.4.3 Derive learning steps
2.2.2.3.4.4 Develop criterion measures for performance
2.2.2.3.5.1 Analyze learning path, steps, objectives for stimulus response requirements
2.2.2.3.5.2 List method media-means alternatives for steps, learning sequences
2.2.2.3.5.3 List advantages, disadvantages for each alternative (cost, use, effectiveness, etc.)
2.2.2.3.6.1 Select strategies (overall and specifics)
2.2.2.3.6.2 Specify method-media-means choices
2.2.2.3.6.3 Specify materials-aids selection and/or production

CHART XXII

PROGRAM 100 ANALYSIS

Functional Analysis

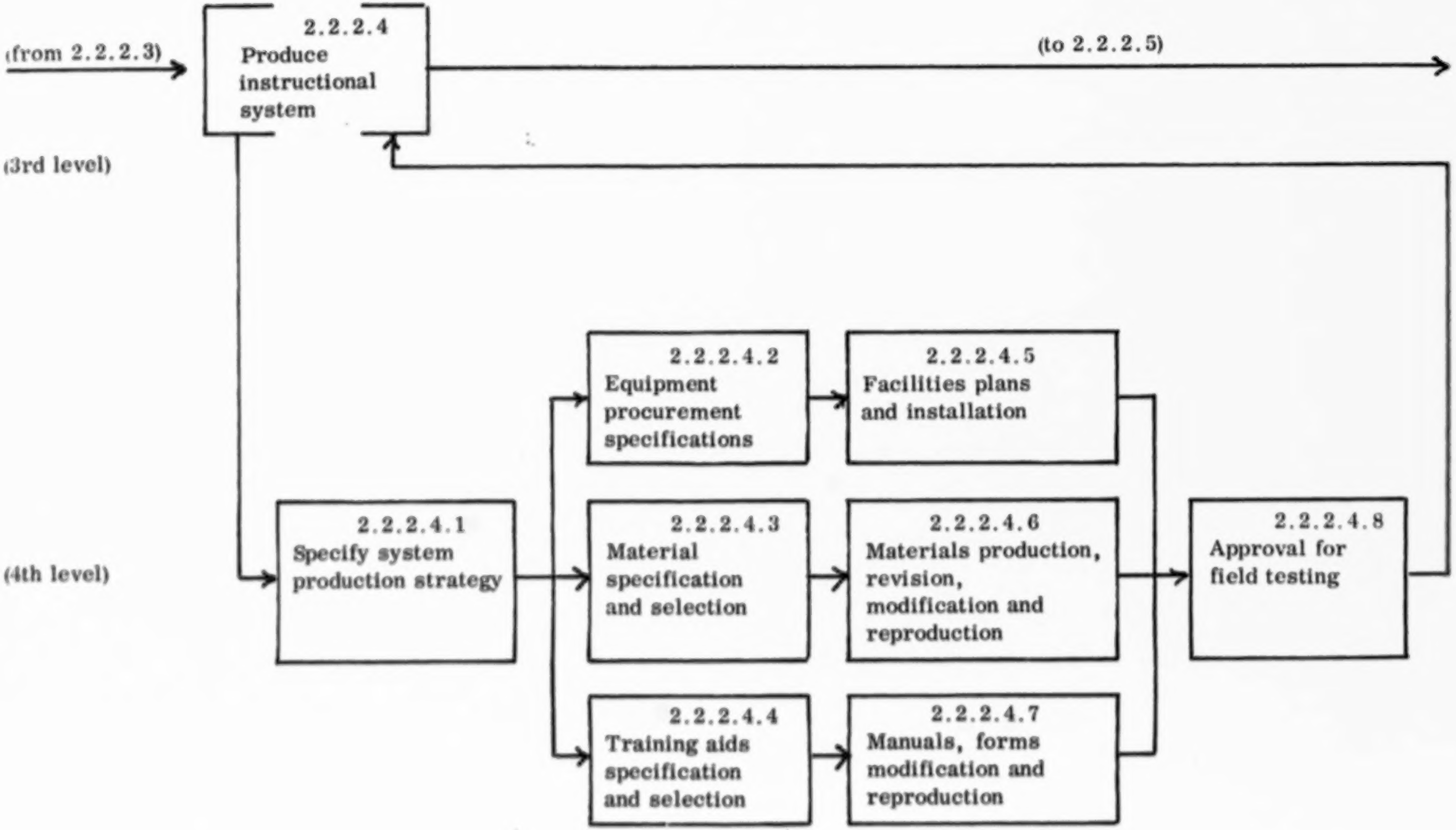

(from 2.2.2.3)
2.2.2.4
Produce instructional system
(to 2.2.2.5)
(3rd level)
(4th level)
2.2.2.4.1
Specify system production strategy
2.2.2.4.2
Equipment procurement specifications
2.2.2.4.3
Material specification and selection
2.2.2.4.4
Training aids specification and selection
2.2.2.4.5
Facilities plans and installation
2.2.2.4.6
Materials production, revision, modification and reproduction
2.2.2.4.7
Manuals, forms modification and reproduction
2.2.2.4.8
Approval for field testing

CHART XXIII

PROGRAM 100 ANALYSIS

Functional Analysis

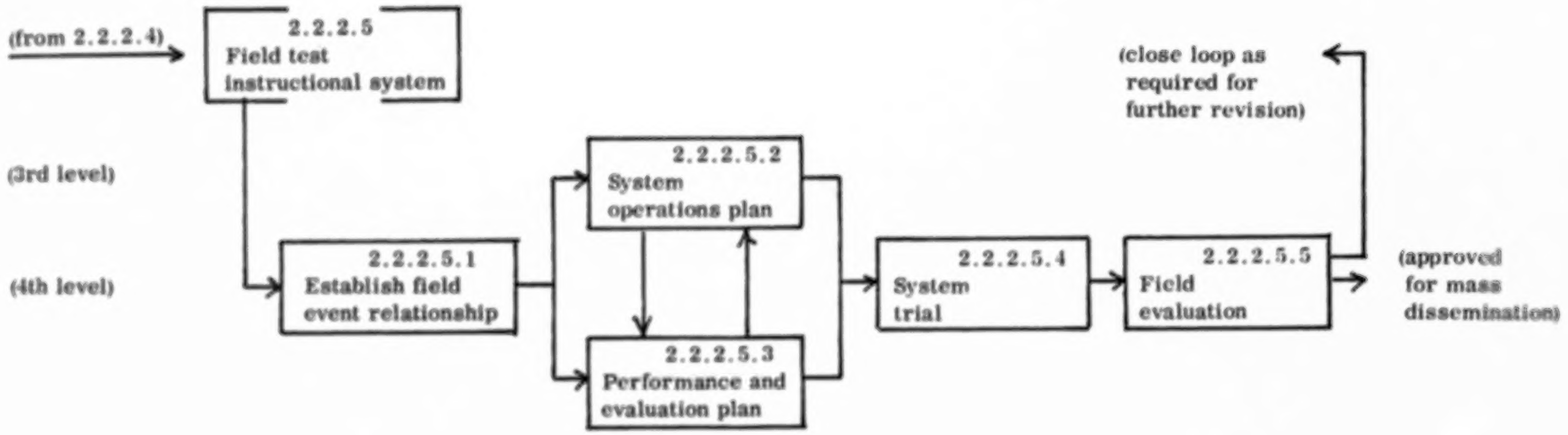
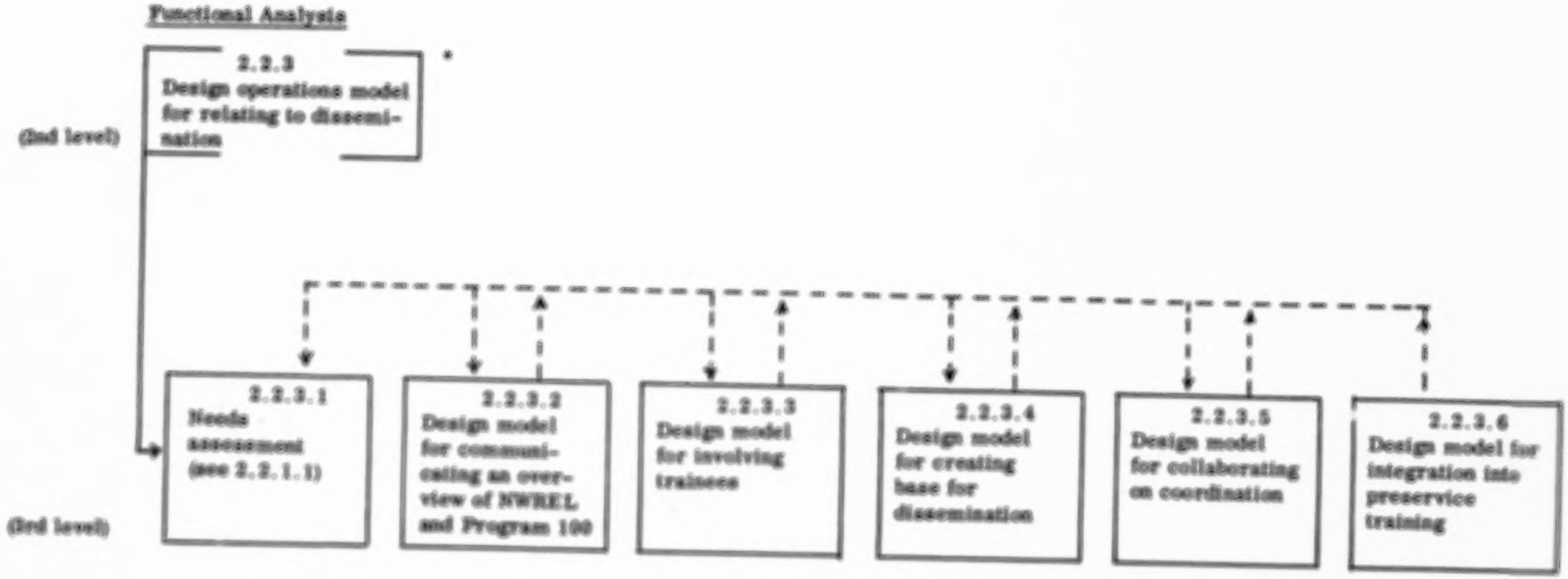


CHART XXIV

PROGRAM 100 ANALYSIS


Functional Analysis
(2nd level)
2.2.3
Design operations model for relating to dissemination
*
(3rd level)
2.2.3.1
Needs assessment (see 2.2.1.1)
2.2.3.2
Design model for communicating an overview of NWREL and Program 100
2.2.3.3
Design model for involving trainees
2.2.3.4
Design model for creating base for dissemination
2.2.3.5
Design model for collaborating on coordination
2.2.3.6
Design model for integration into preservice training

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* (see "Initial Outline for Dissemination Strategy" Part II)

CHART XXV

PROGRAM 100 ANALYSIS

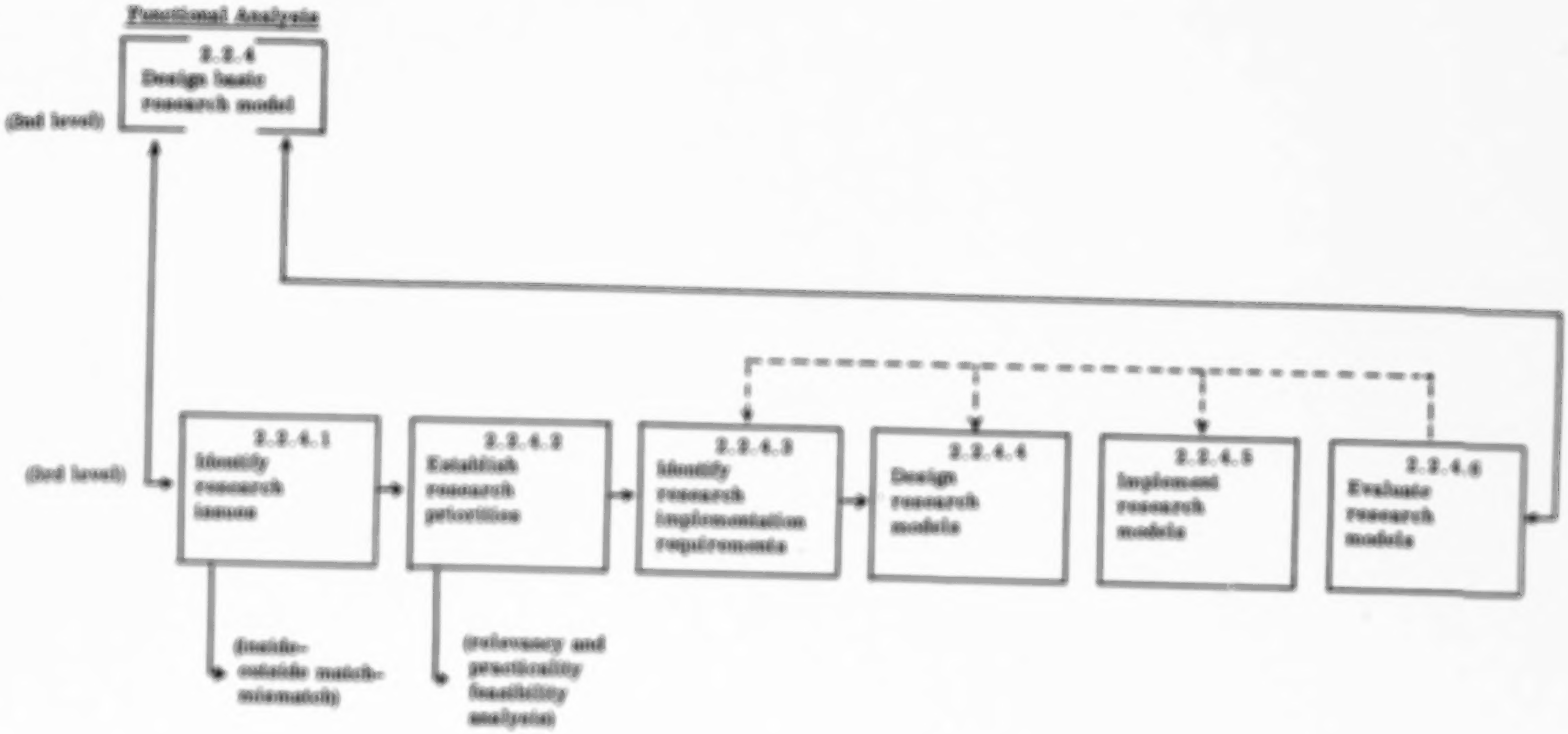


CHART XXVI

PROGRAM 100 ANALYSIS

Functional Analysis

(1st level)

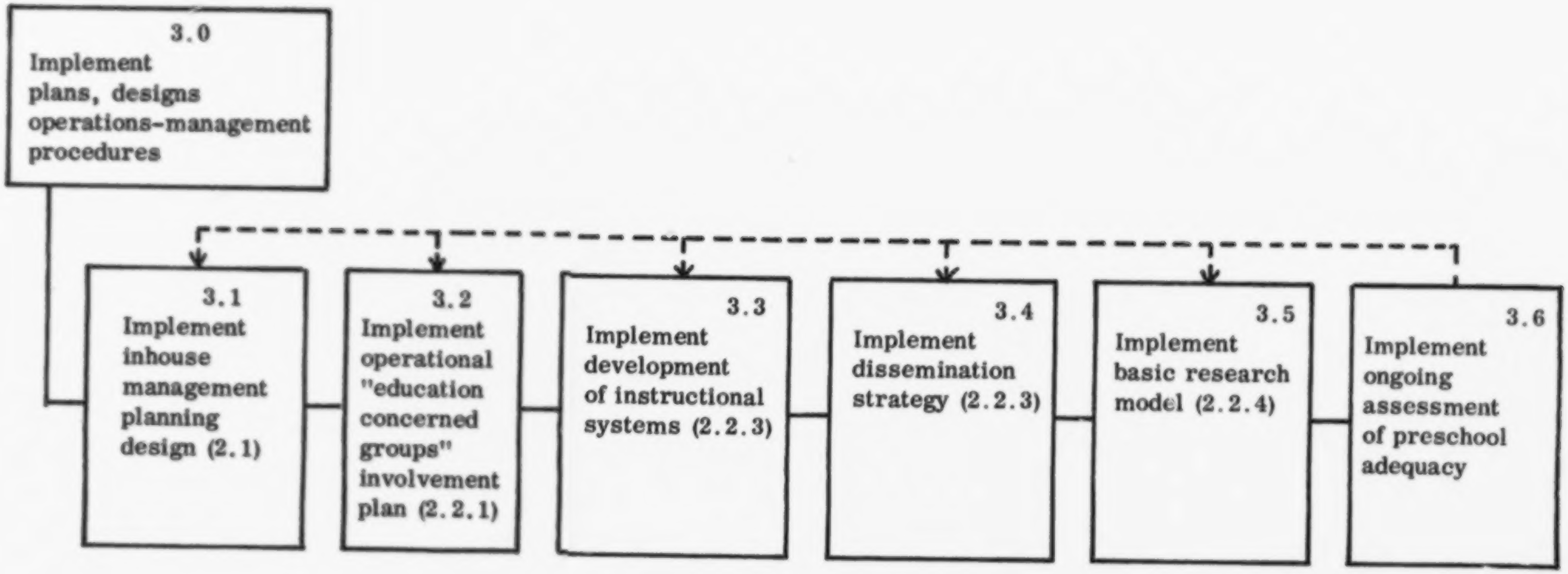

3.0
Implement plans, designs operations-management procedures
3.1
Implement inhouse management planning design (2.1)
3.2
Implement operational "education concerned groups" involvement plan (2.2.1)
3.3
Implement development of instructional systems (2.2.3)
3.4
Implement dissemination strategy (2.2.3)
3.5
Implement basic research model (2.2.4)
3.6
Implement ongoing assessment of preschool adequacy

CHART XXVII

PROGRAM 100 ANALYSIS

Functional Analysis

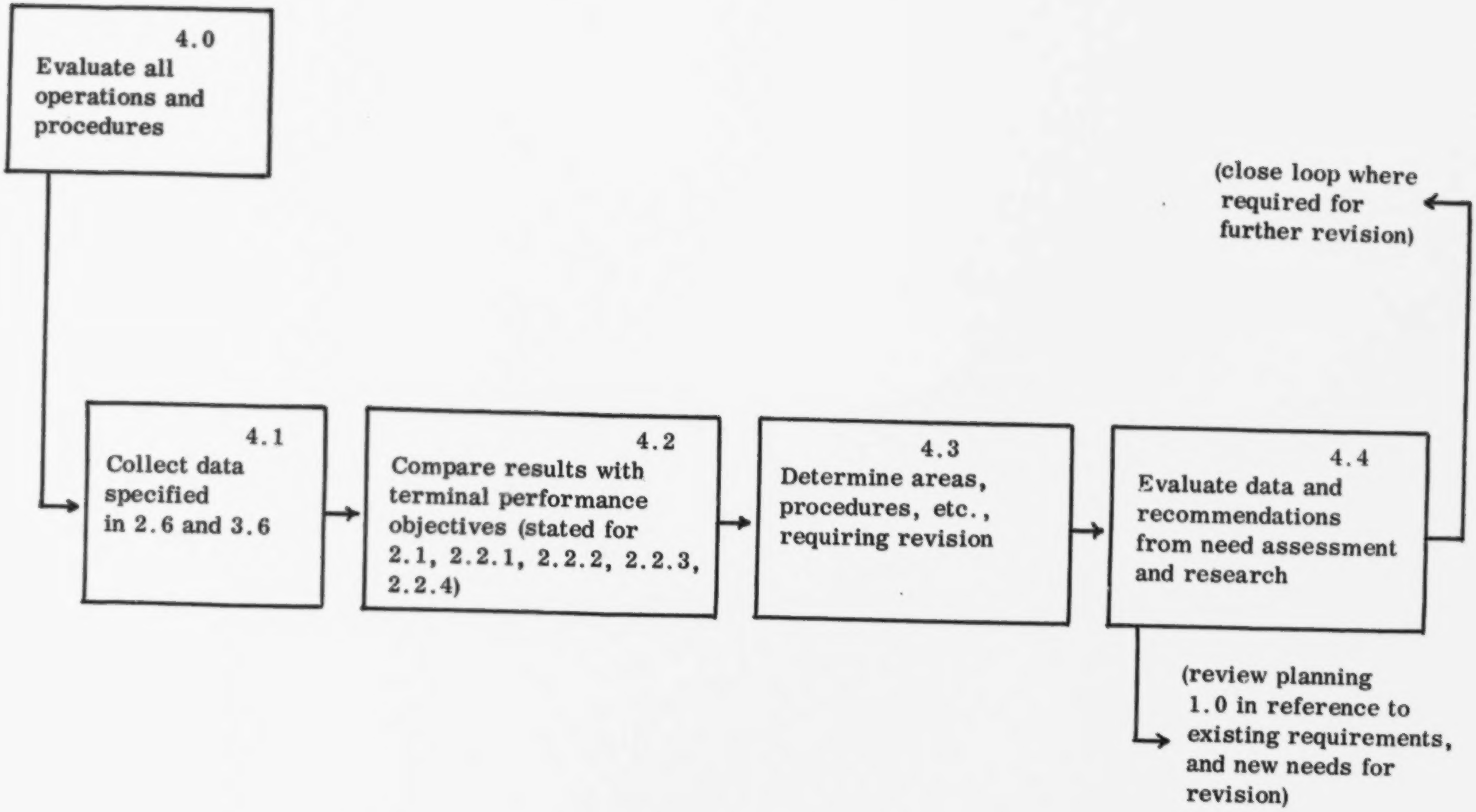
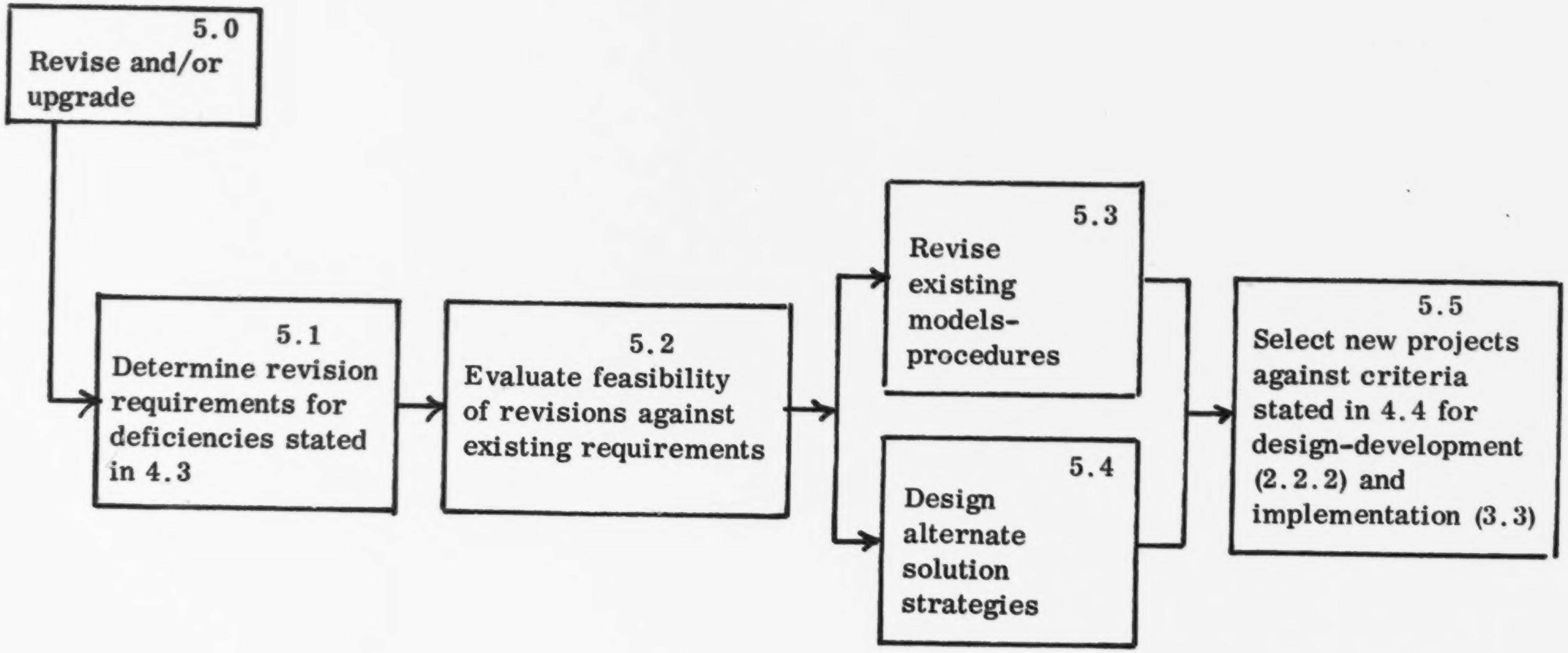

4.0
Evaluate all operations and procedures
4.1
Collect data specified in 2.6 and 3.6
4.2
Compare results with terminal performance objectives (stated for 2.1, 2.2.1, 2.2.2, 2.2.3, 2.2.4)
4.3
Determine areas, procedures, etc., requiring revision
4.4
Evaluate data and recommendations from need assessment and research
(close loop where required for further revision)
(review planning 1.0 in reference to existing requirements, and new needs for revision)

CHART XXVIII

PROGRAM 100 ANALYSIS

Functional Analysis

(1st level)


5.0
Revise and/or upgrade
5.1
Determine revision requirements for deficiencies stated in 4.3
5.2
Evaluate feasibility of revisions against existing requirements
5.3
Revise existing models-procedures
5.4
Design alternate solution strategies
5.5
Select new projects against criteria stated in 4.4 for design-development (2.2.2) and implementation (3.3)

PART III

PROGRAM 200

Intercultural Program

INTERCULTURAL PROGRAM

RATIONALE

Substantial numbers of ethnically different pupils live in the Northwest. Indians, Eskimos and Aleuts make up about 17 percent of the Alaskan population. More than 170,000 Indians and Alaskan natives live in the five Northwest states.[1]

Urbanization is enlarging concentrations of ethnically different people in the region's cities. For example, nonwhite residents account for 5.6 percent of the population in Portland and 8.2 percent in Seattle.[2]

Northwest schools also serve children of migrant workers, mainly Mexican-Americans.

Most of these children enter school with different language, values and patterns of expected behavior. The educational needs of these pupils are influenced by low income, poor nutrition and health, interrupted and nonsequential education, and bicultural conflicts.

The school, obviously, is one agency involved in the education of children and youth. But other public and private agencies and families, peer groups and neighborhoods also have influence on these children's values, learning and aspirations. As a result, before these children enter school they have acquired values and expectations which frequently are not compatible with the goals of the school. The result is a conflict between the expectations of teachers and school administrators and those of the pupils, their families and peer groups. In addition, many children from deprived environments have not developed many of the skills they are presumed to possess when they enter school.

Two facts are obvious. The preschool preparation of children from deprived backgrounds must be improved. Such improvement depends heavily on methods that unify the educational efforts of families, churches, ethnic organizations and private and public service agencies influencing the education of children and youth.

Individuals from different cultural backgrounds need more capacity for self-direction. These students need more ability to make choices and to prepare for futures consistent with their best interests and their values and goals.

---

[1] U.S. Bureau of the Census Report, 1967.

[2] _Ibid._

Since 1966 the Laboratory has given high priority to activities aimed at direct improvement of schooling for culturally different pupils. During those years, numerous other federal, state and private agencies have developed programs aimed at improvement of housing, health, economic security and education of children from low income families.

Work and conferences with leaders and other experiences support the conclusions of many behavioral scientists who note that such efforts can be most effective if they are interrelated, and that improvements can be hastened if persons working with interrelated agencies and social groups possess joint planning capabilities essential for cooperative effort. This is particularly true of education because pupils' motivations and ability to learn are so greatly influenced by housing, health, economic security and peer group norms.

Following is an illustrative list of activities involving cooperative efforts of public and private agencies in Northwest states:

1. Model City programs are being planned in Portland and Seattle

2. The Southeast Education Center in Seattle is planning an educational park for grades 4 through 14

3. A Peer Group Training project for young adults not normally associated with college and university programs is being planned in Portland, Oregon

4. Suburban employment for about 300 inner city adults who, with their families, would become part of the suburban community is being planned in Camas, Washington

5. The Human Relations Committee of the Washington Education Association has developed a plan for desegregation in the Seattle metropolitan area and is exploring ways to implement the plan

6. Thirty-three cooperating agencies are establishing a program of Parent and Child Services for Portland inner city families

7. In Portland a Vocational Education Center is being studied as an alternate to an academic high school

8. A Community School has been proposed as a Title III project in a disadvantaged, primarily white section of Portland

9. In Seattle an Upward Bound project is developing a program for training educational counselors and leaders for rural and urban Indian youth

10. CAP Opportunity School, a church-community action program, is developing a storefront, dropout school in Portland

11. The Preservice Teacher Preparation committee in Seattle is developing a special program to prepare teachers for inner city teaching

12. Model Community Schools are planning phases at Bristol Bay, Alaska, and the Crow Reservation in Montana is planning Model Community Schools

13. The Western Washington tribal leaders are planning an intercultural curriculum

Definitions of Key Terms

Some of the terminology used to describe this program is necessarily technical. Definitions of some key terms as used in this report follow.

Social Group: A number of persons who voluntarily participate in some combination of joint enterprises, e.g., families, peer groups, neighborhood groups

Agency: A public or private organization engaged in services, e.g., school, HUD, Health Department, Welfare Department

Working Team: Individuals representing social groups and agency personnel working together for a mutual purpose

Advocacy: The act of recommending or supporting

Arbitration: Serving to assist two or more persons or groups reach agreement about differences of view or objective

Collaboration: Working cooperatively

Conciliation: Reconciling distrust or hostility

Conflict Resolution: Resolving controversy or discord

Confrontation: Presenting a fact, idea or suggestion for examination, comparison, acceptance or contradiction

Knowledge Utilization: Assembly and application of related research and thought

CHART XXIX

EXPECTED OUTCOMES OF INSTRUCTIONAL SYSTEMS FOR ENLARGEMENT OF PLANNING CAPABILITIES

SYSTEMS DEVELOPED BY THE LABORATORY	WORKING TEAMS	AGENCIES	SOCIAL GROUPS
206 Skilled Collaboration in Interdependent Effort Power equalization Communication Issue analysis Community participation Confrontation Conciliation Arbitration Conflict resolution	Increased interdependence Increased skilled collaboration	Increased responsiveness of agencies to social groups	Increased skills for working with agencies and working teams Increased sense of purposeful participation
207 Needs Assessment Current needs Projected needs	Increased recognition of current and projected needs Increased awareness of interrelatedness of needs Use of needs assessment techniques	Adaptation and use of needs assessment techniques Increased use of data and information from work team	Increased awareness of needs Increased ability to communicate needs Increased ability to perceive group needs
208 Selected Planning Skills Knowledge and research utilization Advocacy Decision making Evaluation design and feedback	Increased use of selected planning skills Increased continuity of planning processes Increased use of planning resources Increased coordination of action components and comprehensive planning	Adaptation and use of selected planning skills Incorporation of functions into agency structure Increased coordination of actions with comprehensive planning	Increased expectancy levels Increased opportunities Increased awareness of opportunities Increased achievement and success levels

Negotiation: Discussion and acceptance of the terms of a transaction or agreement

Power Equalization: Equalization of the relative capabilities of persons or groups to participate in decisions and plans

Trust: Reliance on the integrity, strength or ability of a person or group

OBJECTIVES

Program 200 will utilize facts and experience gained from two years of work to develop instructional systems designed to help educators and other people who work with interrelated agencies acquire and use three types of capabilities essential for joint planning. These capabilities are:

Collaboration in interdependent effort

Assessment of needs to be met by cooperative effort

Cooperative planning of joint efforts to meet needs

The primary objective of this effort is to generate capabilities and attitudes essential for concerted effort to improve schooling. However, it is assumed that these same capabilities and attitudes will serve to improve the quality of participation in the planning and work of other agencies.

Target Populations

The program will seek to enlarge the joint planning and action capabilities of three populations:

Members of social groups which are involved in the work of educational housing, health, welfare and recreational agencies

Employees of the above agencies

Members of working teams

The Laboratory has arranged to initiate such work with Portland and Seattle Model Cities programs.

RESEARCH BASE

Program 200 work plans grow from consideration of research and experience which indicate the substantial degrees to which cooperative community planning can contribute to improving education for culturally different pupils.

For at least four decades planners, social psychologists and political scientists have been refining concepts of democratic planning processes. Application of these concepts can accelerate educational improvements. During the past two years, with assistance of people engaged in planning for education, housing, recreation, health service and welfare, the entire staff has assessed ways the Laboratory can best contribute to such acceleration. That assessment clarified an urgent and growing need for training systems that would prepare both public employees and social group leaders to perform basic planning functions.

Work plans are rooted in research that indicates:

> The characteristics and needs of culturally different children
>
> The structure of social groups and the interrelationships of agencies which can contribute to improvement of education and educationally related services
>
> The types of capabilities and attitudes that contribute to effective cooperative planning and effort

For example, studies by Coleman[3] and by Dentler and Warshauer[4] indicate that:

> Family background is a major factor in student achievement
>
> The effects of teachers' characteristics is greater than that of school facilities or curriculum
>
> Pupils' attitudes toward control and their disposition to be responsive influenced achievement, but schooling has little influence on these attitudes
>
> Nonschool factors heavily influence dropouts

---

[3] Coleman, James S. "Equality of Educational Opportunity." Washington, D.C.: U.S. Government Printing Office, 1966.

[4] Dentler, Robert A. and Mary Ellen Warshauer. "Big City Dropouts." New York: Center for Urban Education, 1965. p. 127.

The need for cooperative work with parents and community agencies is supported by the research of Frost and Hawkes[5] and Bloom[6] which indicates that:

> Early enrichment and child-rearing practices affect intellectual and social growth
>
> Impoverished environments retard cognitive, motor and social development

The importance of sense of control in human interactions is supported by evidence provided by psychological research:

> Ego development and self-concept are affected by role expectancies
>
> Adequate language and communication skills enlarge capacity for human interaction
>
> Occupational and vocational security are major elements in ego developments
>
> Development of ego and self-concept may modify patterns of alienation and apathy

Such research suggests that improvement of education for culturally different pupils lies largely in factors outside of the educational establishment. Furthermore, it is evident that social groups and agency personnel need the specific capabilities and attitudes that facilitate cooperative endeavor.

The work of Bennis, Benne and Chin[7]; Morphet and Ryan[8]; and that of Kvaracous, Gibson and Curtin[9] will be utilized as a partial base for identifying motives, conditions, group relationships and strategies involved in cooperative interagency planning.

---

[5] Frost, Joe L. and Glen R. Hawkes, editors. THE DISADVANTAGED CHILD. Boston: Houghton-Mifflin Co., 1966. p. 7.

[6] Bloom, Benjamin S., STABILITY AND CHANGE IN HUMAN CHARACTERISTICS. New York: John Wiley & Sons, 1964.

[7] Bennis, Warren G., Kenneth D. Benne and Robert Chin, editors. THE PLANNING OF CHANGE. New York: Holt, Rinehart and Winston, 1966.

[8] Morphet, Edgar L. and Charles O. Ryan, editors. PLANNING AND EFFECTING NEEDED CHANGES IN EDUCATION. Denver, Colorado: Publishers Press, 1967.

[9] Kvaracous, William, John Gibson and Thomas Curtin. POVERTY, EDUCATION AND RACE RELATIONS. Boston: Allyn and Bacon, 1967.

Such research suggests that substantial improvements in the education of culturally different children can be speeded by cooperative effort with other agencies affecting childhood environments. This implies the urgent importance of helping members of social groups and agency personnel acquire the capabilities they need for enlightened participation, joint planning and cooperative work on projects involving the resources and efforts of interrelated agencies.

LONG-RANGE PLAN

With the help of consultants a long-range plan has been formulated.

Assumptions

The strategy for pursuit of Program 200 is based on assumptions derived from research and experience.

> Education can increase an individual's ability to become self-directing. The quality of his education is influenced by his environment and by housing, health, and recreational services provided by interrelated public and private agencies.
>
> Coordination of the activities and services of social groups and service agencies will better facilitate action to meet educational needs of culturally different pupils than will separate efforts of the school and other agencies.
>
> Members of culturally different groups such as found in the inner city, Indian communities and migrant workers can and should participate in identifying needs and in conduct of community efforts to meet needs.
>
> Needs will best be met if agency personnel and citizens have the capabilities essential for effective participation in cooperative planning and operation of agency work.

Strategy

Plans for Program 200 work are based on an eight-step strategy designed to help target populations acquire capabilities that will increase their capacities for purposeful collaboration, cooperative assessment of needs, and cooperative planning.

The staff will:

1. Assess the needs of working teams, agency personnel and members of participating social groups to determine the specific capabilities needed for cooperative planning. Needs of work teams engaged in inner city, Indian community and migrant worker projects will be assessed separately.

2. Assess the adequacy of existing instructional systems for helping people acquire such capabilities.

3. Identify components of existing systems and strategies which can be used for development of systems suitable for this program.

4. Create a prototype system.

5. Pilot test the prototype in a controlled laboratory setting.

6. Field test the systems with inner city, Indian community and migrant program working teams.

7. Utilize the systems in stages which will:

   Train people to use needed skills

   Evaluate the effectiveness, strategies, systems and components

   Prepare trainers to make the system generally available

8. Work with people in agencies to incorporate the competencies into the structures of organizations, link organizations with trainers, and encourage experimental studies to determine the effectiveness of instructional systems in terms of changes in performances and attitudes of members of working teams, agency personnel and social groups.

Five-Year Work Projection

1968-69 Analyze reports of planning efforts and research to identify functions, roles and procedures that constitute effective planning

Identify human capabilities involved in effective performance of planning functions and roles

CHART XXX

SCHEMATIC OF INTERCULTURAL BASIC PROGRAM PLAN

Components and Schedules

Components	Fiscal Year 1969	Fiscal Year 1970	Fiscal Year 1971	Fiscal Year 1972	Fiscal Year 1973
INSTRUCTIONAL SYSTEMS FOR SKILLED COLLABORATION IN INTERDEPENDENT EFFORTS	SYSTEMS ANALYSIS AND SYNTHESIS KNOWLEDGE UTILIZATION PROTOTYPE DEVELOPMENT PILOT TESTING	COMPONENTS	FIELD TESTING SYSTEMS	INTEGRATION DIFFUSION	
Outputs	Variety of collaborative skills Review of research and and thought Trainer identification Possible components Develop site criteria Prototype components Prototype systems	Descriptions of testing Evaluation of testing entry training and curricula Revised prototypes	Training system and components Descriptions of use in several working teams Evaluations in terms of outcomes Diffusion criteria developed Trained personnel	Integrated systems	Personnel trained working teams prepared trainers Produce system
Decisions	Different skills for different settings Applicability Priorities of components Apply site criteria Select task forces Evaluation designs	Revise, recycle or proceed Skills effectiveness Select field test teams	Differential effectiveness Gaps or omissions Revise, recycle, proceed or drop	Feasibility Recycle, proceed	Select agencies for research, training Select production procedures
Cost Estimate	$30,300	$50,000	$125,000	$69,000	$35,000
INSTRUCTIONAL SYSTEMS FOR NEEDS ASSESSMENTS	SYSTEMS ANALYSIS AND SYNTHESIS KNOWLEDGE UTILIZATION PROTOTYPE DEVELOPMENT	PILOT TESTING COMPONENTS	FIELD TESTING SYSTEMS	INTEGRATION	DIFFUSION
Outputs	Categorial needs current projected Review of thought and research Trainer identification Possible components	Develop site criteria Prototype systems Descriptions and evaluations of skills Revised prototypes	Training system and components Descriptions and evaluations of outcomes Diffusion criteria developed	Integrated systems	Personnel trained working teams prepared researcher Produce systems
Decisions	Priorities importance availability Select components Select task forces	Apply site criteria Evaluation designs Apply site criteria Revise, recycle or proceed Select field test teams	Differential effective Gaps or omissions Revise, recycle, proceed or drop	Feasibility Recycle, proceed or drop	Select agencies for training, research Select production procedures
Cost Estimate	$30,000	$35,000	$100,000	$30,000	$20,000
INSTRUCTIONAL SYSTEMS FOR SELECTED PLANNING FUNCTIONS	SYSTEMS ANALYSIS AND SYNTHESIS KNOWLEDGE UTILIZATION PROTOTYPE DEVELOPMENT PILOT TESTING COMPONENTS		FIELD TESTING OF SYSTEMS		INTEGRATION DIFFUSION
Outputs	Variety of planning skills Review of research and thought Component alternatives Prototype components entry training procedures curricula Trainer identification	Descriptions and skill evaluations	Descriptions and evaluations in several working teams Training systems and components Evaluation of outcomes Develop diffusion criteria		Integrated system Personnel trained working teams prepared trainers prepared researchers Produce systems
Decisions	Selection of skills available in team available to team unavailable Establish priorities Applicability Select components Select task force Evaluation design	Recycle, revise, proceed or drop	Differendal effectiveness Gaps or omissions Revise, recycle, proceed or drop		Feasibility Apply diffusion criteria Recycle, proceed or drop Select training and research agencies Select production procedures
Cost Estimate	$25,100	$125,000	$125,000	$125,000	$35,000

	Identify specific problems and procedures involved in planning educational improvements for culturally different pupils
	Create prototype instructional systems
	Design evaluation procedures
	In accord with original plans, transfer continued work on Prevocational and Language Arts Instructional Systems (220) and Use of Specialized Personnel (270) to State Departments of Education and local schools
1969-70	Pilot test prototype training systems in cooperation with consultants, educators and personnel directors of local, state and national agencies engaged in housing, health, recreation and welfare
1970-71	Evaluate pilot test results and revise prototype systems and initiate evaluation procedures to identify factors affecting effectiveness of various combinations of training procedures
1971-72	Arrange field tests of revised systems, in association with cooperative agencies, revise systems as indicated by field test results and continue research initiated in 1970-71
1972-73	With personnel directors of cooperating agencies sponsor widespread use of training systems
	Continue research and issue report

ACCOMPLISHMENTS

1. During the past two years a rationale for Laboratory roles in education for culturally different children has been developed in cooperation with civic leaders, public agency personnel, teachers, administrators, college and university specialists. That statement is included in Part III of this report.
2. Communication lines have been established with educationally related agencies and with leaders of inner city and Indian social groups.
3. Curriculum modules have been developed, pilot tested and revised.

4. Working relationships with staffs of Office of Economic Opportunity, Head Start, Model City, Follow Through, Youth Opportunity Center, and National Indian Assessment, have been established. Earlier links with school organizations have been strengthened.

5. The staff has participated in educational planning work of other agencies including Follow Through, Central Cities Task Force, and Senate Subcommittee on Indian Education and Title III state planning councils.

6. Fifteen field papers were produced.

7. The staff has directed six pilot activities in the Northwest region. These activities initiated relationships with existing institutions and agencies which facilitate work in programs which help meet the immediate needs of the region's culturally different children. These activities include:

   A demonstration summer counseling program for junior high students carried out in Tacoma, Washington. This was designed to develop a summer student-parent counseling program as a means of elevating aspiration levels of inner city children in grades six and ten and improving communication between school personnel and parents of children in the program.

   The development of 400 curriculum modules for use by teachers in inner city schools in Portland, Oregon. The purpose of this activity was to develop, field test and disseminate language arts and vocational instructional systems designed to fit specific needs of disadvantaged youth.

   A multiagency effort to assist the preparation of teachers for inner city schools carried out in Seattle, Washington. This has resulted in the development of films and teacher guides for use in the early phases of teacher preparation.

   A program for optimum use of specialized personnel. This was carried out in selected elementary schools in Portland, Oregon. The purposes were to organize a team of special personnel to diagnose educational needs of individual pupils and to prescribe instructional and counseling services for students with learning problems. A computerized pupil record system was developed for storage and retrieval of pupil information for use by teachers and specialized personnel.

The development of readers for culturally different children in isolated schools . A team was formed including a cultural anthropologist, a linguist, a State Department of Education expert in language arts, a university expert in language arts and two teachers from isolated schools enrolling ethnically different children. This team developed a set a set of materials for use in beginning reading for Kuskokwim and Athabascan children. These readers, workbooks and teachers' guides emphasize the experiences of the isolated student and lead him gradually to an awareness of the world outside his experience.

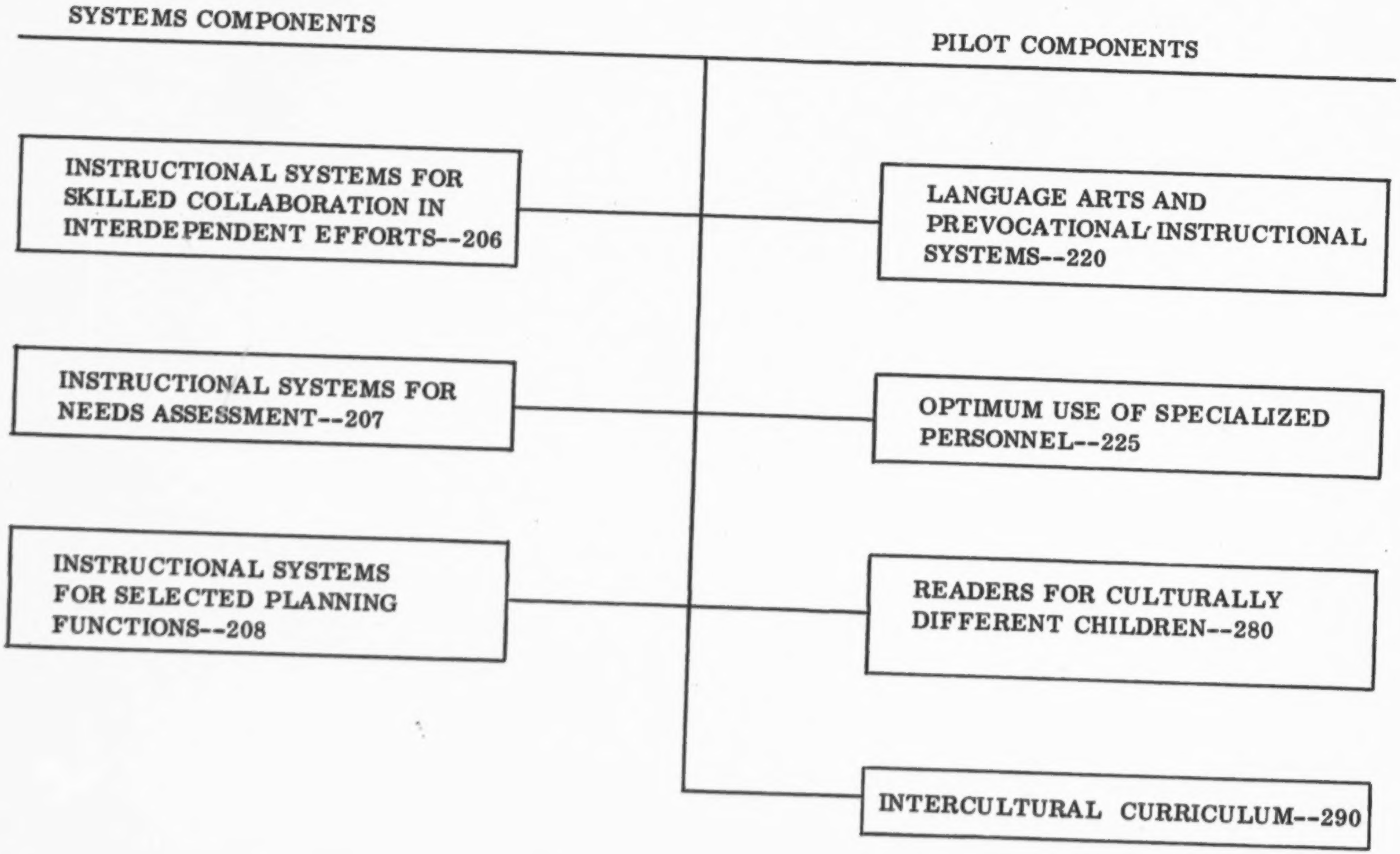
Planning sessions with Indian community members and people from Indian educational agencies to develop effective preschool and school programs for Indian children and youth.

LONG-RANGE WORK PLAN

Detailed work plans for each Program 200 component follow.

CHART XXXI

PROGRAM 200


SYSTEMS COMPONENTS
PILOT COMPONENTS
INSTRUCTIONAL SYSTEMS FOR SKILLED COLLABORATION IN INTERDEPENDENT EFFORTS--206
INSTRUCTIONAL SYSTEMS FOR NEEDS ASSESSMENT--207
INSTRUCTIONAL SYSTEMS FOR SELECTED PLANNING FUNCTIONS--208
LANGUAGE ARTS AND PREVOCATIONAL INSTRUCTIONAL SYSTEMS--220
OPTIMUM USE OF SPECIALIZED PERSONNEL--225
READERS FOR CULTURALLY DIFFERENT CHILDREN--280
INTERCULTURAL CURRICULUM--290

INSTRUCTIONAL SYSTEMS FOR SKILLED COLLABORATION IN INTERDEPENDENT EFFORTS--206

Objective:	Develop instructional systems to help people acquire capabilities essential for skilled collaboration in interdependent efforts of representatives of agencies and social groups working cooperatively to improve education of culturally different children. Examples: communication, confrontation, conciliation, arbitration, negotiation, conflict resolution
Progress:	December 1, 1967 to November 30, 1968
Stage 1 NEEDS ASSESSMENT 12/1/67-11/30/68	Need for training members of working teams in collaboration skills explored by program staff, advisory committees and working teams.
Plans:	December 1, 1968 to November 30, 1973
Stage 2 SYSTEMS ANALYSIS AND SYNTHESIS 12/1/68-5/1/69	Conduct a series of task analyses to determine the collaborative skills needed for cooperative interagency planning and action. Skills particularly useful for inner city and Indian community working teams will be identified.
Stage 3 KNOWLEDGE UTILIZATION 5/1/69-11/30/70	Assemble and evaluate related research and thought to identify existing procedures for helping members of work teams acquire capabilities for skilled collaboration. Identify people who can serve as trainers to help teams acquire such capabilities. A series of papers identifying applicable systems, components, and training procedures will be prepared in consultation with members of working teams. Establish priorities for prototype development.

Stage 4 PROTOTYPE DEVELOPMENT 5/1/69-11/30/70	Set up task force for development of at least one prototype collaborative skills instructional system for use with working teams. Design evaluation procedures. Train personnel for experimental use of prototype. Select working teams to serve as subjects for pilot testing.
Stage 5 PILOT TESTING COMPONENTS 12/1/69-11/30/70	Pilot test prototype components with selected groups and working teams. Evaluate results. Revise system.
Stage 6 FIELD TESTING OF SYSTEMS 12/1/70-6/1/72	Field test systems with working teams engaged in interagency improvement of education for inner city, Indian and migrant pupils. Prepare report describing results and recommending procedures for general use of systems.
Stage 7 INTEGRATION OF SYSTEMS 6/1/72-11/30/72	Determine feasibility of combining the systems developed in 206, 207 and 208 into an integrated system. If feasible develop and field test integrated system.
Stage 8 DIFFUSION 12/1/72-11/30/73	Prepare trainers to use systems with working team personnel. Arrange training programs. Stimulate research to assess effectiveness of instruction in terms of changes in performances and attitudes of working teams and social groups.

INSTRUCTIONAL SYSTEMS FOR NEEDS ASSESSMENT--207

Objective:	Develop instructional systems to help people acquire capabilities essential for enlightened assessment of current and future needs on which members of social groups and working teams engaged in interagency planning can most productively focus effort. Examples: income, health, education, housing, recreation
Progress:	December 1, 1968 to November 30, 1969
Stage 1 NEED ASSESSMENT 12/1/68-11/30/69	Collection of data indicating current and future needs of culturally different children has begun.
Plans:	December 1, 1968 to November 30, 1973
Stage 2 SYSTEMS ANALYSIS AND SYNTHESIS 12/1/68-9/1/69	With social groups, agencies and work teams compile and assess categorical lists of current and projected needs. Categorical priorities will be based upon the importance, availability and usability of data, and serve as a partial basis for development of needs assessment of instructional systems.
Stage 3 KNOWLEDGE UTILIZATION 9/1/69-11/30/69	Assemble and evaluate related research and thought regarding existing procedures for helping members of groups identify current and projected needs. Assess information, techniques and procedures suitable for pursuit of priorities set in Stage 1.
Stage 4 PROTOTYPE DEVELOPMENT 12/1/69-4/30/70	Develop prototype instructional systems which will be created or adapted for use with working teams. Design evaluation procedures of select working teams to serve as subjects for pilot testing. Train personnel for experimental use of prototype.

Stage 5 PILOT TESTING COMPONENTS 5/1/70-11/30/70	Pilot test prototype components with members of social groups, agencies and working teams. Evaluate test results and revise system for field testing.
Stage 6 FIELD TESTING SYSTEMS 12/1/70-6/1/72	Field test with working teams engaged in city, Indian and migrant educational enterprises. Prepare reports analyzing nature and extent of results obtained by various types of instruction.
Stage 7 INTEGRATION OF SYSTEMS	Determine feasibility of integrating needs assessment instructional systems. If feasible, develop and field test an integrated system. Explore feasibility of integrating skills assessment systems with skills systems (206) and planning skills systems (208).
Stage 8 DIFFUSION 12/1/72 and continuing	Prepare trainees to instruct working teams. Arrange for instruction of working teams. Stimulate research to assess effectiveness of instruction in terms of changes in performances and attitudes of working teams.

INSTRUCTIONAL SYSTEMS FOR SELECTED PLANNING FUNCTIONS--208

Objective: Develop instructional systems to help people acquire capabilities essential for cooperative interagency planning of educational programs for culturally different pupils. Examples: identification and use of relevant knowledge, advocacy, equalization of power, evaluation techniques, training.

Progress: December 1, 1967 to November 30, 1968

Stage 1
NEED
ASSESSMENT
12/1/67-11/30/68

Working teams have identified capabilities that facilitate effective interagency planning. Consultation with advisory committees and working teams resulted in recommendation that the Laboratory can best contribute by development of instructional systems designed to help members of interagency working teams acquire such capabilities.

Plans: December 1, 1968 to November 30, 1973

Stage 2
SYSTEMS
ANALYSIS AND
SYNTHESIS
12/1/68-4/1/69

Analyze objectives and functions of inner city and Indian community interagency work teams. Identify cooperative planning capabilities that contribute to effective performance of functions.

Stage 3
KNOWLEDGE
UTILIZATION
2/1/69-6/1/69

Examine research and thought clarifying the nature of planning functions and capabilities. Identify component skills involved in each capability. Assemble and evaluate procedures and materials for helping people acquire capabilities. Establish priorities for instructional systems development.

Stage 4 DEVELOPMENT OF PROTOTYPES 7/1/69-4/1/70	Develop prototype systems for use with inner city, Indian and migrant work teams. Select work team for experimental use of prototypes. Design evaluation procedures. Train personnel for use of prototype.
Stage 5 PILOT TESTING 9/1/69-4/1/70	Pilot test prototypes with members of selected social groups and working teams. Assess results. Redesign systems.
Stage 6 FIELD TESTING OF SYSTEMS 4/1/70-11/30/72	Field test with inner city, Indian and migrant working teams. Prepare reports showing results and recommending procedures for general use of systems.
Stage 7 INTEGRATION OF SYSTEMS 12/1/72-11/30/73	Determine feasibility of combining systems for development of specific planning capabilities. If feasible, develop and field test an integrated system. Examine feasibility of integrating systems with skilled collaboration systems (206) and needs assessment systems (208).
Stage 8 DIFFUSION 12/1/73 and continuing	Prepare trainers to utilize instructional systems. Arrange training programs. Stimulate research to assess effectiveness of instruction in terms of changes in the performances and attitudes of members of working teams.

LANGUAGE ARTS AND PREVOCATIONAL INSTRUCTIONAL SYSTEMS--220

Objective:	Develop, field test and disseminate language arts and vocational instructional systems designed to fit specific needs of disadvantaged youth.
Progress:	December 1, 1966 to November 30, 1968
Stage 1 PLANNING Prior to 12/1/66-1/1/67	Formulated plans for initiating work in kindergarten, elementary and high school grades. Designed evaluation procedures.
Stage 2 INSERVICE TRAINING 1/1/67-2/28/67	Conducted workshops for 24 kindergarten teachers concerned with language and perceptual motor development, 20 elementary teachers and 40 high school teachers.
Stage 3 DESIGN 3/1/67-5/31/67	Formulated behavioral objectives for linguistic and prevocational instruction. Prepared, pilot tested and evaluated experimental instructional modules.
Stage 4 INSTALLATION 6/1/67-6/1/68	Field tested and revised materials. Produced additional modules.
Stage 5 EVALUATION DESIGN 1/1/68-6/1/68	Evaluated systems.

Stage 6 **REDESIGN** **6/1/68-9/1/68**	**Revised systems and evaluation design.**
Stage 7 **DISSEMINATION** **9/1/67-6/1/68**	**Disseminated tested systems.**
Plans:	**December 1, 1968 to November 30, 1969**
Stage 8 **FINAL PACKAGING** **12/1/68-9/1/69**	**Prepare revised modules for dissemination.**
Stage 9 **DISSEMINATION** **1/1/69-6/30/69**	**Disseminate through State Departments of Education and instructional materials centers operated by colleges and universities.**

OPTIMUM USE OF SPECIAL PERSONNEL--225 (formerly 270)

Objectives:	Organize a team of special personnel to diagnose educational needs of individual pupils and to prescribe instructional and counseling services for students with learning problems.
Progress:	December 1, 1966 to November 30, 1968
Stage 1 PLANNING Prior to 9/1/66	Administrators and specialized personnel from eight Portland elementary schools participated in planning a pupil record system designed to aid special personnel in diagnosing students' learning problems and in prescribing appropriate educational experiences.
Stage 2 INSERVICE PLANNING 9/1/66-12/31/66	Team met, defined working relationships, reviewed content of record system, and outlined procedures for referrals, diagnosis and prescription.
Stage 3 RESEARCH DESIGN 1/1/67-3/31/67	Formulated research design.
Stage 4 PILOT TEST 4/1/67-11/30/67	Pilot tested system with 15 students. Data indicated system to be effective. Results on file.
Stage 5 REDESIGN 12/1/67-7/1/68	Redesigned system on the basis of pilot test results. Used system experimentally in five more schools.

Stage 6 COMPUTER STORAGE 2/2/68-9/1/68	Computerized pupil records for storage and retrieval by special personnel and teachers.
Stage 7 REFINEMENT 6/1/68-9/20/68	Computer record keeping system refined, report routines developed as followup and management tools.
Stage 8 AWARENESS DISSEMINATION 9/21/68-11/30/68	Reports disseminated. Sites for field testing identified.
Plans:	December 1, 1968 to November 30, 1969
Stage 9 EXPANSION 12/31/68-6/1/69	Field tests in two additional clusters of schools. Analyze installation processes.
Stage 10 PHASEOUT AND DISSEMINATION 9/1/69-11/30/69	Transfer work to participating schools. Prepare report of experiment. Disseminate results.

READERS FOR THE CULTURALLY DIFFERENT IN ISOLATED SCHOOLS--280

Objective:	Prepare and field test readers and supplementary materials designed for use in isolated villages in Alaska.
Progress:	September 1, 1966 to November 30, 1968
Stage 1 PLANNING 9/1/66-2/1/67	Assembled developmental team including cultural anthropologist, linguist, State Department of Education and university experts in language arts, and two teachers from schools enrolling ethnically different children.
Stage 2 DESIGN 2/2/67-6/1/67	Team identified two target populations: Kuskokwim and Athabascan children. Team, working with a writer, outlined materials for primary reading program.
Stage 3 DEVELOPMENT 6/2/67-11/30/67	Began preparation of six levels of readers, remedial materials, teachers' manuals and a resource book.
Stage 4 DESIGN CHANGES 10/15/67	Advisory group reviewed progress and recommended that content of the readers should be relevant to Alaskan village schools.
Stage 5 EVALUATION DESIGN 3/18/68	Evaluation design team set policies for evaluation, criteria for site and teacher selections, and bases for evaluation. Two experimental groups will be carried for three years.

Stage 6 TEACHER AND SITE SELECTION 4/1/68-5/31/68	Approximately 20 teachers and village councils invited to participate in the field test.
Stage 7 TEACHER WORKSHOP 8/18/68-8/24/68	Teachers, author, Laboratory staff conducted workshop in Fairbanks to plan field test and collection of evaluation data. One-day meeting held to inform supervisors of the Alaska State Department of Education and the Bureau of Indian Affairs.
Plans:	December 1, 1968 to November 30, 1969
Stage 8 PILOT TESTING AND FEEDBACK 9/1/68-6/1/69	Pilot test and data collection.
Stage 9 CONTINUED PRODUCTION 11/30/68-9/1/69	Prepare remaining six levels of readers and associated materials. Revise first six levels on bases of pilot test results.
Stage 10 TEACHER WORKSHOPS 8/15/69-9/1/69	Conduct one workshop for teachers engaged in second year of testing and one for teachers beginning use of readers.
Stage 11 REVISION AND DISSEMINATION 12/1/69-11/30/70	Revise materials. Package teacher training materials for transfer to Alaskan colleges and universities.

Evaluate materials--prepare technical report.

Stage 12
EVALUATION
SUMMARY
1971-72

INTERCULTURAL CURRICULUM--290

Objectives:	To work with Western Washington tribal leaders, Community Action Program directors and the American Friends Service Committee to develop procedures for encouraging Indian identity and problem solving in intercultural settings, including the classroom.
Progress:	June 1, 1968 to December 1, 1968
Stage 1 EXPLORATION 3/1/68-5/1/68	Contacts made with Western Washington tribal officials and CAP directors to determine degree of interest.
Stage 2 PREPLANNING 5/1/68-6/7/68	Initial preplanning by American Friends Service Committee and Laboratory led to a meeting of tribal leaders and CAP directors. Problem statements and analyses of alternatives were discussed in the one-day conference.
Plans:	December 1, 1968 to November 30, 1969
Stage 3 PROBLEM DEFINITION 7/1/68-11/30/68	Each tribal group described the problems and alternatives for Indians in local intercultural settings. Several tribes described need for preparation of procedures to develop Indian awareness and knowledge through study of Indian history, art, legends, political structure and current problems in intercultural classrooms. Indians are the primary source of such procedures and information.
Stage 4 DEVELOPING LOCAL INTERCULTURAL PROCEDURES 12/1/68-10/1/69	Each tribal group will develop procedures for developing an understanding of its own heritage and determine those portions which are best taught in homes and the community and those best taught in the intercultural classroom. The technical assistance of writers, media, anthropologists, educators, and so forth will be utilized. Community and school communication will be encouraged. Training consultants will be employed.

Stage 5 PILOT TESTING 2/1/69-6/1/69	Tribal groups will assess components for validity. Components will be tested in the home, the community and each participating school. A materials and procedures evaluation of intermediate objectives will be done.
Stage 6 REVISION 6/1/69-9/1/69	Accumulation of data and information will be used to revise procedures as needed prior to the second year of testing.
Stage 7 COMPARISON 9/1/69-11/30/69	Tribal groups and school groups will gather to assess the successes, failures and problems encountered among participating tribal groups. Commonalities and uniqueness of procedures will be noted for cross-seeding of ideas as well as increasing the potential for disseminating the developmental processes.

PART IV

PROGRAM 400

Improving Instruction in Small Schools

PROGRAM 400: IMPROVING INSTRUCTION IN SMALL SCHOOLS

RATIONALE

Approximately one-third of all Northwest pupils live in relatively isolated rural communities. Most of them attend small high schools enrolling less than 200 pupils. Research shows that generally these small schools do not provide instruction, guidance or counseling of quality comparable to larger ones.

Growing percentages of rural youth live their adult lives in cities. Those remaining in rural communities need comparable intellectual, social and personal competence. Pupils enrolled in isolated schools have urgent need for wider ranges of up-to-date instruction.

Rural youth have direct contact with fewer occupational and social situations than their urban counterparts. Consequently, they have limited perceptions of changing occupational opportunities and requirements. They have need for special guidance and counseling services.

Modern educational technology can help meet both of the above needs.

Research shows that generally these small schools in the Northwest do not offer adequate instructional programs, guidance programs, nor do they have as qualified staff and administrators as do most schools in urban areas.

Youth enrolled in the rural isolated schools need an efficient and realistic educational program that is designed to meet specific and unique problems existing in rural areas. These programs should include a wider range of instructional choices, better guidance and counseling services, more efficiently planned instructional areas, and teachers who can organize and manage instruction that enriches perceptions constricted by the limitations of rural environments.

Recently a Presidential commission made a nationwide survey of conditions in rural areas.[1]

The following statements from this study provide a basis for research dealing with specific educational conditions in the Northwest. This study will be conducted to provide a foundation for development of a comprehensive effort to improve the region's small schools.

---

[1] A Report to the President's National Advisory Commission on Rural Poverty, September, 1967.

Rural America has lacked leadership and spokesmen in calling attention to its needs.

Three million rural people are classified as illiterates (5th grade achievement or less). This attests, in general, to the inadequacies of schools in rural America.

There has been little redesign of outdated rural educational programs to meet modern technological potentials.

Urban riots very often have their roots in rural poverty, since the rural poor migrate in larger numbers to our cities. Few return to rural America since they feel the rural slums worse.

Fourteen million people living in rural America are identified as being affected by poverty. Eleven million are white. The definition of poverty: income under $3,000. Of the 14 million, 70 percent have incomes under $2,000; 25 percent less than $1,000.

Rural poverty has no geographic boundaries and is present and serious in the Northwest region.

Most of the rural poor do not live on farms, but in open areas, villages and small towns.

One out of every 13 homes in rural America is classified as unfit to inhabit.

Public services are generally inadequate in rural areas.

Economically, the rural areas are outside the market. Their economic growth is not commensurate with growth in general.

In metropolitan areas one person out of every eight is considered poor. In suburban areas one person out of every 15 is considered poor. In rural areas one person out of every four is considered poor.

Forty percent of the nation's poor live in rural areas. Thirty percent of the nation's population live in rural areas.

Rural adults and youth are products of an educational program less adequate than that of most cities and metropolitan suburbs. The extent to which rural people have been denied equality of educational opportunity is evident from both the results and the resources that go into the system. On both counts, the quality of rural education ranks low.[2]

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[2] Ibid.

Basic problems that have grown out of conditions in rural areas are the bases for the components being developed in the Small Schools Program. A summary of these problems follows.

Improvement Patterns Affecting Rural Education

Curricula and organizational patterns designed for urban children and large school systems, but utilized in rural areas, often do not meet the needs of rural children in small schools. Since the needs of rural students are not being met, rural dropout rates are higher than those of urban and suburban areas. More than 2.3 million rural youth age 14 to 24 dropped out of school before graduating in 1960. The low preparation level of some rural educators, high teacher turnover, and the lack of articulation among rural school programs impeded improvements. Often rural communication systems are inadequate. For example, poor quality telephone service and poor television reception hinder progress in rural education.

School plant planners are, for the most part, concerned with the problems of "bigness"; their work has little cogency for small isolated schools. One room rural school facility improvement has been slight even though twelve thousand of these schools still operate in the United States. Approximately 1,200 are in the five Northwest states.

Many wage earners migrate from rural to urban areas. Thus the tax base of rural schools is lowered. Equalization factors of many states do not include consideration of the increased per pupil cost of operating the small necessarily existent school.

Rural areas have not been able to compete with cities in attracting and holding specialized professional personnel.

In addition, parochialism of many rural areas inhibits the use of specialized personnel from outside agencies concerned with improvement programs.

Rural areas often cannot meet population density requirements established by federal agencies. Thus the rural areas are not eligible to receive certain federal funds. Even the competition for the skills of directors and writers of projects has been won by urban centers.

The Low Aspiration Level of Rural Youth and Difficulties of Attaining Competitive Level of Education

In many rural areas, neither the occupational counseling nor vocational education programs are adequate to stimulate the aspiration of youth.

Indeed, in many areas there are no counselors; vocational education offerings are nonexistent, minimal or obsolete. Thus, aspiration levels are not raised. Students are relatively unaware of modern occupational opportunities and requirements.

In the near future rural teacher functions will place decreased emphasis upon information giving and increased emphasis on diagnosis of learning needs and instructional management.

The percentage of urban youth enrolled in college is approximately twice that of rural students. Rural families, many rural educators and community leaders are only slightly aware of the current needs for advanced education.

Isolated rural areas unable to support high schools or specialized schools must send their children to more urbanized centers. Provisions for doing so are inadequate. Barriers of peer group acceptance, the reluctance of some rural educators to accept "outside" students and the necessity of living away from home in strange surroundings contibute to the difficulty of attaining competitive educational status.

The decline of job opportunities in rural areas as business and industry move to urban centers further restricts the occupational opportunities and perceptions of rural youths.

Increasing Discrepancies Between Rural and Urban Cultures

Decision making powers (voting strength, for example) are being shifted to the urban population. The abandonment of rural railroad stations and urban-oriented air service accentuate this discrepancy. Medical, cultural, social and religious services continue to decrease in sparsely settled areas.

Assumptions

In light of the preceding conditions and problems, the following assumptions have been used in developing components of the Small Schools Program.

> A relatively large number of small secondary schools and elementary schools are necessarily existent.
>
> Rural high school youth have an urgent need for broadened curricular offerings.
>
> Educational technology will increasingly supplement but not replace the classroom teacher,

A growing array of learning materials, media and instructional strategies will be available.

Instructional systems can be developed, field tested and disseminated among rural elementary and secondary schools. Schools will use such systems to generate specific behavioral changes in students.

A program can be developed which is responsive to individual learner differences.

Instructional systems can be supplemented with management information about student learning patterns. This permits a student to enter, advance and exit from instructional systems in accord with his ability.

LONG-RANGE OBJECTIVE

The major objective of the Small Schools Program is to create conditions which expand learning opportunities and alternatives for youth enrolled in isolated rural schools. Each program component will be designed to help resolve the following specific educational problems.

Limited curricular offerings

Low levels of student achievement

Inadequately prepared teachers

Limited community perceptions of possible improvements

To achieve that objective, the Small Schools Program team, working with representatives of State Departments of Education, schools, universities, social and industrial agencies, has developed components designed to:

Use modern technology to provide a wider range of instruction and guidance services

Define the teacher's role as an instructional manager and provide training required for teachers to assume this role

Provide training for teachers and administrators in the development and use of instructional systems

Plan educational facilities that better provide for individualization of instruction

Design and test an educational change model in rural areas

Specific objectives are detailed below in sections titled LONG-RANGE PLAN and PROGRESS AND PLANS.

To assure that all program components are reality tested and to maximize achievement of long-range objectives, field test sites representative of a range of conditions in the Northwest will be selected. These sites will also serve as intermediate dissemination and training agencies.

Specialists recognize that instructional improvements are initiated by developments in educational technology and that to implement change both formal and informal levels of action are necessary. The development activities of this program now focus on the technological developments. As more research is done and more is known about the formal and informal levels of activity, components facilitating informal and formal adaptations will be incorporated.

In addition, long-term rural educational policies will be cooperatively developed for each state--Alaska, Oregon, Washington, Montana and Idaho.

RESEARCH BASE

The research base for Program 400 comes from three basic areas: multimedia instructional systems, computer assisted instruction, computer assisted guidance, and the change process as it related to rural areas. A brief summary of these backup materials follows.

Self-Instructional Systems

Research by Briggs,[3] Carlson,[4] Coulson,[5] Crowder,[6] Flothow,[7] Gallegos,[8] Mitzel,[9] Skinner,[10] and Vocational-Technical Education Research and Development Project at Washington State University[11] contribute substantially to the development of self-instructional systems and to means for installing them in schools.

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[3] Briggs, L. J. "Two Self-Instructional Devices." TEACHING MACHINES AND PROGRAMMED INSTRUCTION. (Lumsdaine and Glaser, editors.) Washington, D.C.: National Education Association, 1960. pp. 299-304.

[4] Carlson, R. O. ADOPTION OF EDUCATIONAL INNOVATIONS. Eugene, Oregon: University of Oregon Press, 1965.

[5] Coulson, J. E. PRESENT STATUS AND FUTURE PROSPECTS OF COMPUTER BASED INSTRUCTION. Technical Report SP-1629. Santa Monica, Calif.: System Development Corporation, 1964.

[6] Crowder, N. A. "Automatic Tutoring by Intrinsic Programming." TEACHING MACHINES AND PROGRAMMED INSTRUCTION. Washington, D. C.: National Education Association, 1960. pp. 286-298

[7] Flothow, R. C. "Systems Analysis and School Functions." JOURNAL OF SECONDARY EDUCATION. 42, No. 6: 245-250; October, 1967.

[8] Gallegos, A. "Total Instructional Systems." EDUCATIONAL TECHNOLOGY. 9, No. 13: 1-5; July 15, 1967.

[9] Mitzel, H. E. EXPERIMENTATION WITH COMPUTER ASSISTED INSTRUCTION IN TECHNICAL EDUCATION: SEMI-ANNUAL PROGRESS REPORT. University Park, Pa.: Computer Assisted Instruction Laboratory, June 1966.

[10] Skinner, B. F. "The Science of Learning and the Art of Teaching." TEACHING MACHINES AND PROGRAMMED LEARNING. (A. A. Lumsdaine and R. Glaser, editors.) Washington, D. C.: National Education Association, 1960. pp. 99-113.

[11] Bakamis, William A. "Identification of Task and Knowledge Clusters Associated with Performance of Major Types of Building Trades Work." 7, Pullman, Wash.: Washington State University.

Bowles, Roy. "Social Characteristics of High School Students Planning to Pursue Post-High School Vocational Training." 17.

Hill, Edwin. "The Development and Testing of an Experimental Polysensory Self-Instructional System Designed to Help Students Acquire Basic Electrical Occupational Competencies." 19.

Nish, Dale. "The Development and Testing of a Polysensory Instructional System for Teaching Knowledges and Skills Associated With the Use of Expandable Polystyrene Plastics." 18.

Perkins, Edward and Ross Byrd. "Clusters of Tasks Associated with Performance of Major Types of Office Work." 14.

Rahmlow, Harold, "Mathematics Clusters in Selected Areas of Vocational Education." 8.

Rahmlow, Harold. "A Series of Programmed Instruction Books for Learning Occupationally Oriented Basic Mathematics." 16.

Sergeant, Harold. "Development and Testing of an Experimental Polysensory Instructional System for Teaching Electric Arc Welding Processes." 24.

Slocum, Walter and Roy Bowles. "Educational and Occupational Aspirations and Expectations of High School Juniors and Seniors in the State of Washington." 1.

The theoretical basis for development of instructional systems is essentially programed learning theory, modified in accord with research indicating certain inadequacies of programed texts. The modifications of programed instruction theory, as applied to instructional systems are as follows:

The involvement of a person as instructional manager

The variety of instructional strategies

The use of variable step sizes in the learning sequences

Utilization of cooperative peer effort as a motivation

Self-instructional systems as developed in the prototypes borrow from programed learning in that they are built around responses made by individual learners instead of approaches teachers make to groups of learners. The systems also enable each pupil to complete successfully a specific set of learning experiences. Each unit in the systems performs an essential function. Prototype systems have undergone extensive testing during their initial stage of development at Washington State University.

Current instructional system field tests show results of high student achievement, interest and motivation, and positive teacher attitudes. During the past year, sites in Alaska, Montana, Idaho and Oregon greatly enlarged the scope of field testing and provided reality testing. Results of testing systems in electronics, welding, speech and plastics have been compiled.

Applications of systems to elementary schools are based on part of the extensive arithmetic research of Van Engen at the University of Wisconsin, Murphy in social studies and language arts at Central Washington State College, and Corbett's Ten-County (Montana) Survey which was validated by Hartenberger.

Refinements incorporated into redesigned systems provide for evaluative feedback. External agents and individuals, including regional advisory committees, rural sociologists, anthropologists, academic specialists, business and industrial representatives, have all been used in the feedback and evaluation processes.

Computer Assisted Instruction (CAI)

Computer assisted instruction efforts are based in part on the results of researches by Grubb and Selfridge, who compared CAI performance with that of instruction via programed texts and the lecture methods. Their findings favored CAI on three performance criteria: mean instruction time; mean review time; and average achievement. Research by Schurdak substantiates these findings. Early studies conducted at the University of Illinois using the PLATO II systems showed that students using CAI had examination grades parallel to those of the rest of the class and exhibited enthusiasm about computer assisted instruction.

The conclusions listed below should be considered tentative, but they represent the results of recent studies.

1. Students seem to learn at least as well with CAI as with conventional classroom instruction. Most of the researchers report this conclusion for various short courses. Some researchers indicate that greater learning and retention can occur with CAI. In addition, Coulson has reported an example of raising the performance of lower-aptitude students to that of higher-aptitude students.

2. CAI provides learning and retention at least equivalent to conventional techniques in the same amount of time required for conventional techniques. Some researchers report significant reduction in time required when CAI is used.

3. The computer learning program makes logical decisions and adjusts to individual student differences with regard to learning sequence, depth and mode of material, and rate of progress.

4. The computer records and manipulates a wide variety of learning data about the student during instruction, for example, sequence of learning steps, response time, number of errors and cumulative performance. All researchers report this capability as being well within the capacity of information that can be collected, it is difficult to select only that information which can be permanently recorded.

5. The computer reduces certain kinds of tedious work usually required of the student, for example, in mathematical logic.

6. To provide enrichment and motivation a variety of audiovisual aids is included in the learning program. The computer also provides dynamic real time displays of mathematical and physical relationships, and relieves the students of a large number of routine calculations. However, computer-controlled slide presentations are not necessarily better than visual materials presented in booklet form.

7. Time sharing (a number of students using the same computer simultaneously, and perhaps at remote distances from the computer) is within the capabilities of present technology.

8. A broad range of courses can be programmed for CAI. No known limits have been reported yet as to the kinds of subject matter that can be programmed. Well constructed subjects in particular can be easily handled by CAI tutorial systems.

9. Students are generally interested in and like CAI.

    Student attitude toward CAI generally relates directly to the success or failure of personal performance

    Appropriate pacing of materials presented and time-out limits can keep the concentration of even very young children at a relatively high level.

    However, students often feel the need for shorter sessions with more discussion and teacher interaction

10. Learning time and learning effectiveness with CAI depend on a number of factors. With respect to learning time:

    The major determinant of time to complete the program is the number of student responses required to meet internal course criteria established by the author-teacher

    Employment of optional delays in the learning program plus the opportunity for review and remedial work provide help for some students

    There is wide variability in how long children will work at the computer instructional terminal when free to decide

    Deterioration in learning performance has been noted in grade school children when sessions run longer than 20-30 minutes

    With respect to CAI learning effectiveness, we need to examine the factors of learning style, instructional sequencing, and learning performance:

    The cognitive style of a student appears to be related to his ability and his approach to and utilization of the computer system.

    Visual learners respond more favorably to sequences of graphically or pictorially laid-out instructional items. In many cases these learners have been brought to a level of superior performance on achievement tests.

Student errors during instruction and responses to self-evaluation questions provide effective criteria for branching the student to different instructional sequences.

Branching methods can provide more efficient instruction than fixed-sequence presentations.

Allowing students to determine their own sequence of instruction does not work as well with younger children as with older ones.

Too many "help" sequences available encourage students to rely on them as the easier and faster way of getting an answer.

A sophisticated latency criterion of performance can be easily applied in a computer based laboratory.

When poor typists are permitted to score their own implicit responses rather than type them out, their performance is markedly better.

Auto-instruction can be effective in helping mentally retarded young children to read.

Student responses entered in wrong form (where only one form of an answer is permitted) tends to interfere seriously with student learning.

Some students get flustered by the machinery and need, therefore, a good orientation to this form of instruction.

Students become confused in a time-sharing system, if the computer does not respond immediately to their commands.

A large proportion of the teacher's current responsibility for imparting facts, basic skills and concepts, as well as his responsibility for providing routine drill, can be handled more efficiently and effectively by the machine.

11. Already existing curriculum materials can be readily used in development of computer courses.

12. The computer has been shown to provide an excellent opportunity for experimental studies learning.

13. Computer stimulated laboratories can be helpful for:

    Teaching lab procedures

    Exposing students to a variety of analytical problems and physical processes in considerably less time than actual laboratory analysis

    Providing an excellent adjunct to conventional instruction

    Reducing student stress in learning by allowing freedom to manipulate objects normally not permitted, e.g., in clinical nursing.

14. A versatile computer programming logic has been developed that permits:

    Easy changes from one subject matter to another

    A syntax for the student to use in communicating with the computer

    Some ease and flexibility in preparing programs

    Substantial possibilities for constructed student responses

15. Time for qualified personnel to write, test and validate one hour of CAI instruction may be from 75 to 150 man hours. Total cost, including machine time, may be several thousand dollars. (These are estimates based on conversations with people involved in programed instruction and CAI. However, so many variables are involved, such as quality of instructional materials, level of instruction, and extent of validation, that such estimates are tentative. The literature contains a little information on cost-benefit analysis.)

Most of the above findings have resulted from very short courses conducted with small numbers of students. Long-term CAI data involving sizeable numbers of students have not yet been collected.

Computer Assisted Counseling

Computer assisted counseling studies by Cogswell and Estavan of Systems Development Corporation have successfully simulated a school counselor's cognitive behavior in the appraisal of student information and his overt verbal responses in student interviews. This automated interview reviews student progress, collects comments from the student, reacts to student plans, and helps the student plan a schedule of high school courses. The findings indicated that at least 75 percent of the same substantive statements used by counselors could be incorporated into the simulation program. Results from validation tests demonstrated that these automated procedures were useful for both field application and research.

Results of the work of Tondow and Betts with computer based course selection and counseling showed that students readily accepted the computer as a source of information. They had high regard for the legitimacy of information they received.

Other approaches contributing to the basis for Northwest Regional Educational Laboratory efforts in computer assisted counseling are those of Ellis who is working with information retrieval in vocational counseling at Harvard University.

Change Process

All programs of the Northwest Regional Educational Laboratory are concerned with change processes, as it relates to the RD&D model being developed by the Laboratory. The strategies being used by the Small Schools Program are based on the work done by Lionberger, Mort, Ryan, Gross, and more recently Rogers and Eichholtz and in the COPED project.

The theoretical framework for pilot testing materials at one site and subsequent field testing will be described in more detail in the assessment and evaluation section of this report. It stems from the work of Rogers who stated that the most effective means of conceptualizing the adoption and diffusion process is to view it in terms of the behavior of the adopter. He summarizes as follows:

> Behavior is oriented toward attaining ends or goals
>
> It takes place in situations
>
> It is normatively regulated
>
> It involves motivation and expenditure of effort

LONG-RANGE PLAN

The long-range plan for Program 400 includes seven major procedures. Each self-instructional system to be made available to the schools will be developed using these procedures. Each of the procedures is fundamental to achieving the program's long-range objective of improving education in isolated small schools.

Procedures to Develop Instructional Systems

Scan pertinent literature

Conceptualize design for evolving a specific educational product or process

Develop prototype product or process

Field test product or process

Redesign, based on field test

Demonstrate

Aid schools to adopt and/or adapt and install the product or process

WORK SCHEDULE: 1968-74

Program 400 staff will scan, explore and monitor educational developments throughout the United States in the period 1968 through 1974. When appropriate, products and/or processes will be adopted and/or adapted for use in the region's rural schools. In addition, the staff will follow the general work plan outlined below.

1968-69

Aid schools to adapt and/or adopt and install self-instructional systems for high school youth in welding, plastics, electricity-electronics and speech

Field test and redesign systems for high school youth in physical science, Spanish and mathematical analysis

Conceptualize self-instructional systems for elementary school youth in mathematics and reading

Develop, field test and redesign computer assisted guidance-counseling program

Field test and demonstrate computer assisted instruction in mathematics

Devise a model for mobilizing all rural community resources for contribution to educational programs

1969-70

Continue installation of industrial arts and speech systems

Field test and redesign systems for elementary school youth in mathematics and reading

Develop prototype of computer assisted guidance and counseling program

Conceptualize and develop systems for high school youth in business education and drafting

In cooperation with Program 100 team, conceptualize and develop means to help teachers act as instructional managers and as instructional systems developers

Conceptualize and develop means for preparing administrators to administer schools in which self-instructional systems are used

Conceptualize and develop designs for school buildings in which self-instructional systems will be used

Begin installation of computer assisted instruction sequences in mathematics

Conceptualize and develop a guidance program for rural school children including human, machine and curriculum aspects

Field test and redesign model for mobilization of rural community resources

1970-71

Field test and redesign the total guidance program for rural school children including human, machine and curriculum aspects

Demonstrate physical science, Spanish and mathematical analysis systems; begin installation process

Demonstrate and begin installation of systems for elementary school youth in mathematics and reading; assess need for other such systems and begin development

Demonstrate computer assisted guidance and counseling program

Assess needs for additional self-instructional systems for high school youth and begin conceptualization-installation process

Begin installation of systems in business education and drafting

In cooperation with Program 100 team field test, redesign and demonstrate means to help teachers act as instructional managers and instructional systems developers and prepare administrators to administer schools in which self-instructional systems are used

Aid two school districts to design plants especially suited to the use of self-instructional systems

Continue installation of computer assisted instruction sequences in mathematics

1971-72

Begin installation of systems for elementary school youth in mathematics and reading; conceptualize and develop additional needed systems

Begin installation of systems in physical science, Spanish and mathematical analysis

Begin installation of instructional procedures to help teachers act as instructional managers and instructional developers

Evaluate effect of building design (see 1970-71, item 7 above) on use of instructional systems; if warranted, begin demonstration and diffusion process

Conceptualize and develop a demonstration-dissemination network to help small high schools and elementary schools institutionalize the use of self-instructional systems

Identify, develop, field test and redesign additional self-instructional systems

1972-73

Continue conceptualization-installation procedure for developing elementary and secondary school self-instructional systems

Begin installation of means to help teachers become instructional managers and instructional systems developers

Conceptualize a communications system or systems to help rural educators overcome barriers imposed by geographic isolation

1973-74

Continue to expand development of self-instructional systems for elementary and secondary school youth

Develop, field test and redesign the communications systems noted above and if feasible install the system or systems

Begin to adapt appropriate techniques, processes and products developed in Programs 100 and 200 for use in rural areas

ASSESSMENT AND EVALUATION

The overall assessment and evaluation of the development of the Small Schools Program is predicated on two underlying assumptions:

The education of children, youth and adults is the responsibility of the total community

The school is the most logical agency to coordinate, make relevant, assess, monitor, and provide learning experiences to ensure the attainment of desired learner outcomes

The following hypotheses will be tested:

There is a relationship between

Number and quality of educational experiences provided and level of aspirations/expectations for further education and/or training and occupational level of students

Training level of teachers and the level of aspirations of students

The community attitude (understanding - value - belief) and the number and quality of educational experiences provided for children and youth

Community attitude and the training level of teachers employed

Community attitude and the provision for inservice training for teachers

The administrator's competency as an educational leader, his vision, his aspiration and expectations of quality for teaching-learning experiences for students, his openness to new ideas, and the number and quality of educational experiences provided for students

The school boards' and other community opinion leaders' vision, level of aspiration and expectation of quality for teaching-learning experiences for students, openness to new ideas, and the number and quality of educational experiences offered students in school and the nature of the professional staff employed

There is a relationship between

Level of aspiration of parents and level of aspiration of children

Level of education of parent and attained educational level of children

There is a relationship between

Increased aspirations and further education, training and job level for which students desire to attain

Improved academic achievement in content areas, e.g., math, physical science, foreign languages, communication skills, social science and level of achievement attained by students

There is a relationship between academic achievement of students and

Number and quality of educational experiences available

Level of preparation of teachers

The administrator's competency as an educational leader and manager, his vision, his aspirations and expectations of teaching and learning outcomes, his openness to new ideas (willingness to innovate) and to community attitudes regarding education and its support within the community

A demographic instrument was developed to collect baseline data on the major variables available at the field test sites. These variables include information on the teachers, students, school program and the community. A report describing the range of these conditions is available in the Laboratory.

Collaborative efforts with the Research and Development Center (CASEA) personnel at the University of Oregon, also resulted in the development of a series of instruments for teachers, administrators and school service personnel, i.e., secretaries, bus drivers, janitors. These instruments called Project Baseline, (a complete set is available in the Laboratory) will be used annually to obtain measures on: (1) organizational norms; (2) decision-making patterns (hierarchical or participatory); (3) communication networks; (4) reactions to staff meetings; (5) problem-solving and innovative capabilities; and (6) satisfaction and alienation. In Project Baseline, descriptions of the same school systems will be collected over a period of several years to provide information about what happens when different school systems introduce an innovation or attempt to solve an existing problem.

Applications to date include two field test sites, Montana and Idaho, with the data under analysis. This is a long-range assessment plan that will yield increasingly important results as Program 400 activities continue.

In addition, a research and development continuum was developed. Based to a degree on the work of Clark and Guba, the continuum outlines the specific steps through which Program 400 Components may pass enroute to mass dissemination. Of course not all components will sequentially follow the steps outlined in the continuum since the developmental readiness of a specific activity varies. Some steps may be omitted entirely and others may be repeated two or three times. Entry level of any activity may also vary across the continuum, again, depending upon its stage of development when it is acquired. See Chart XXXII.

RESEARCH	SCANNING	INVENTION	PROTOTYPE	ADAPTATION	FIELD TEST/REDESIGN		
					Test 1	Redesign A	Test 2
Research literature provides basis for invention or innovation.	Search for research findings, examine the inventions and assess prototypes that offer promise to the solutions to educational problems.	Formulate new solutions or construct packages that create new ways of dealing with identified problems.	The results of inventions are packaged into ways usable in field settings.	Modification of an existing prototype to fit conditions of a new environment.	Try out invention, prototype, or adaptation at a field test site without the inventors' influence.	Modify prototype in light of feedback data resulting from initial field trails.	Redesigned prototype is retested in field trial situation.
	• What is known? • Where are prototypes being used that appear to hold promise? • How ready is prototype for trial?	• Can products be constructed that at least partially solve identified educational problems? • Are they feasible? • Can they be engineered?	• What is the performance, costs, convenience? • Is it generalizable? • Does the product appear to meet educational needs?	• How extensive are the required modifications? • How well does it work after adaptation? • Does it hold promise? • Should it be tested more broadly?	• How well does it work in a reality situation? • Do results justify continued development? • What changes are needed prior to use or further field testing? • Is it ready for expanded testing or broad dissemination?	• How extensive are the modifications required? • Are new field trial conditions indicated?	• How well did it work after modification? • Do results justify continued development? • Are new field conditions required for adequate testing? • Is it ready for expanded testing or broad dissemination?

CHART XXXII

RESEARCH AND DEVELOPMENT CONTINUUM FOR PROGRAM 400

FIELD TEST/REDESIGN			DIFFUSION			ADOPTION		
Redesign B	Test 3	Redesign C	Dissemination	Internal Demo.	External Demo.	Trial	Installation	Institutional
Further modifications to tested prototype are made based on field test #2 data results.	Final field testing of redesigned prototype in expanded field test sites.	Final modifications.	To create widespread awareness of the invention among practitioners, i.e., to inform.	To afford an opportunity to examine and assess operating qualities of the invention, i.e., to build conviction.	To continue information process to build conviction outside basic field sites.	To build familiarity with the invention and provide a basis for assessing the quality, value, fit, and utility of the invention in a particular institution, i.e., to test.	To fit the characteristics of the invention to the characteristics of the adopting institution, i.e., to operationalize.	To assimilate the invention as an integral and accepted component of the system, i.e., to establish.
• How extensive are modifications needed? • Are expanded field trial conditions indicated?	• How well did it work after second modification? • Do results justify continued development? • Are still more changes needed? • Is it ready for expanded testing or broad dissemination?	• What final refinements are needed prior to dissemination?						

ACCOMPLISHMENTS

Self-Instructional Systems for High School Youth

Multimedia self-instructional systems in speech, electricity-electronics, plastics and welding have been developed. These systems have been field tested at Sultan, Anatone and Springdale, Washington; Cascade, Idaho; cooperatively among four high school districts in Chouteau County, Montana; and in Glennallen, Alaska and Condon, Oregon. Teachers using the systems at each site received entry training in use of the self-instructional systems.

Prototype systems in physical science, advanced mathematics and Spanish are being tested. After redesign, they will be reality tested at other sites in five states. Systems in drafting and shorthand are in developmental stages.

Change model strategies for dissemination purposes are being field tested and will become available for use in rural areas of each state.

The Small Schools team together with consultants have devised a strategy to speed the adoption of self-instructional systems and other curricular changes in rural communities.

Five doctoral dissertations resulting from the prototype development processes have been synthesized into a summary report. (Dissertations and the report are available in the Laboratory.) Evaluation procedures during 1967 centered about:

1. Effectiveness of processes used in the orientation of teachers and administrators
2. Nature and scope of organizational and physical facility problems (scheduling, independent study)
3. Kinds of human factors resulting from their use (feelings and reactions of users, teacher's role)
4. Feedback needed to improve and refine them (technical layout, clarity, sequencing)
5. Impact they had on students, teachers and administrators (examples of spinoff, community reactions)

The assessments were carried out through the use of log books used by administrators, teachers, and principals while self-instructional systems were in operation and completing a final evaluation questionnaire by the teacher after self-instructional systems were used.

Preliminary results indicate the speech self-instructional system will require few alterations prior to broader dissemination in 1969. The plastics self-instructional system was too short and needed supplementary units developed and some redesign to add to the quality of this package. Results from the initial field testing of both welding and electricity-electronics indicated a need for extending and redesigning the systems.

Computer Assisted Instruction

In cooperation with the Washington State University Vocational Education Research Project 21, programed vocational mathematics books have been prepared. Seven have been written into machine language and pilot tested. Development of the computer assisted instruction component was delayed because of the lack of an operational time-share service. Problems yet to be overcome include delayed computer response and inadequate telephone communications. Efforts to eliminate these conditions are underway.

Guidance and Counseling Demonstration

Twelve units were developed and demonstrated in grades one through twelve. Each included printed materials and accompanying tapes, films and slides. Unit titles are:

Orientation to preschool and making new friends

Looking at myself and choosing guideposts

Accepting responsibility and getting along in a group

Living with beauty and workers in transportation and communication

Appreciating my country and solving problems

Understanding my actions and forming attitudes

Learning to study and cultural understanding

A changing world and problem solving

Planning my future and educational planning

Exploring interests, aptitudes and occupations, and using the library

You, the citizen, and orientation to college or employment

You, the individual, the worker and the consumer in a changing world

The teacher-developed guidance units were given reality checks in the classrooms at Kimberly, Idaho. A jury of guidance experts assessed their content for accuracy for methods used. Student reactions to the use of the units was also recorded. State Department of Education personnel were also actively involved in these assessment processes.

Tabulation of these results shows that several of the units were found by teachers and students to be most useful. As a consequence, the Idaho State Department of Education has expressed interest and willingness to disseminate these materials to other schools in Idaho. A commercial firm has requested permission to publish three of the units that were developed. These actions enabled the Laboratory to phase out this part of Component 430 during 1968.

Self-Instructional Systems for Elementary School Youth

Work in elementary self-instructional systems during 1968 was at the scanning stage of development. Identification of two promising systems has resulted to date: the Patterns in Arithmetic videotape lessons for grades 1-6 developed by the Research and Development Center at the University of Wisconsin and the kits of materials developed under a Title III grant in central Washington in cooperation with Central Washington State College at Ellensburg.

Videotapes of the arithmetic program at one grade level have been assessed by two rural school educators to determine usability and extent of adaptation required prior to use. Both agreed that the content of the tapes were of high quality and would materially upgrade their present elementary arithmetic programs. Suggestions were made to develop pre and posttests that could be used by classroom teachers using the videotapes in order to determine skill levels of students and/or entry points for learning.

The Central Washington materials have been assessed by rural elementary teachers using a taxonomy based on the research of Bloom's cognitive domain. Results have not been completed to date.

WORK PLANS

Detailed work plans for each Program 400 component follow.

SELF-INSTRUCTIONAL SYSTEMS FOR HIGH SCHOOL YOUTH--410

Objective:	Develop, evaluate and demonstrate multimedia self-instructional systems in speech, plastics, welding, industrial arts, Spanish, physical science and business education for youth in isolated high schools.
Progress:	September 1, 1967 to November 30, 1968
Stage 1 TEST 12/1/67-3/30/68	Subsystems in speech, electricity-electronics, welding and plastics developed and field tested in Washington, Montana, Idaho, Oregon and Alaska. A workshop prepared administrators and teachers to use systems.
Stage 2 DESIGN AND EVALUATION 12/1/67-5/30/68	Subsystems in Spanish, advanced mathematics, and physical science and additional welding and electronics subsystems developed and pilot tested. New subsystems in industrial arts and business education designed. Instruction by computer (Component 420), a computer aided mathematics instruction experiment initiated.
Stage 3 REDESIGN 6/1/68-8/30/68	Subsystems redesigned on bases of pilot test results.
Stage 4 DEMONSTRATION 9/1/68-11/30/68	Key State Department of Education personnel, legislators, community leaders and board members observe use of systems. Initial field testing of new subsystems in shorthand, drafting, physical science, Spanish and mathematics analysis begun in Washington, Oregon, Montana, Idaho and Alaska.
Plans:	December 1, 1968 to November 30, 1969

Stage 1 **CONCEPTUALIZATION** **12/1/68-3/1/69**	**Develop additional prototype sybsystems in occupational communication skills in cooperation with Vocational Research and Title III projects.**
Stage 2 **FIELD TESTING** **12/1/68-5/30/69**	**Field test new physical science, Spanish, drafting and advanced mathematics analysis subsystems in Alaska, Oregon, Montana, Idaho and Washington.**
Stage 3 **REDESIGN** **6/1/69-11/30/69**	**Redesign physical science, advanced mathematics, Spanish, business education and drafting subsystems on basis of field test data.**
Stage 4 **DISSEMINATION** **9/1/69 and continuing**	**Work with educational agencies and organizations to promote widespread use of systems.**

PREPARING TEACHERS FOR INSTRUCTIONAL MANAGEMENT ROLES--411

Objective:	Develop instructional management system serving as a base for inservice programs to prepare teachers for effective use of instructional systems.
Plans:	December 1, 1968 to 1971
Stage 1 PLANNING AND DESIGN 11/30/68-2/28/69	Program 100 and 400 staffs jointly designed content, format and evaluation procedure.
Stage 2 PROGRAM DEVELOPMENT 3/1/69-6/30/69	The 100/400 teams develop materials.
Stage 3 PILOT TEST 9/1/69-9/1/70	Pilot test prototype instructional management system in five states.
Stage 4 EVALUATION AND REDESIGN 1970-1971	Evaluate pilot results. Revise system.

PREPARING ADMINISTRATORS FOR ADMINISTRATION OF INSTRUCTIONAL SYSTEMS--412

Objectives:	Develop inservice training devices for preparing administrators to organize staff, facilities and public information necessary for effective use of instructional systems.
Plans:	December 1, 1968 to November 30, 1969
Stage 1 PLANNING 12/1/68-2/28/69	Staff, facilities and information factors essential for systems identified by use of test site evaluative data. Systems designers, Laboratory staff and test site personnel plan workshop.
Stage 2 WORKSHOP 6/8/69-6/15/69	Conduct two-week workshop for test site personnel (superintendents, principals, boards, systems managers) and representatives of State Departments of Education.
Stage 3 EVALUATION AND FOLLOWUP 9/1/69-11/30/69	Use workshop recommendations as bases for followup work with field site personnel.
Stage 4 DOCUMENTATION 12/1/69-1/30/70	Prepare publication analyzing administrative principles, procedures and problems involved in effective installation of instructional systems.

SPECIFICATIONS FOR BUILDINGS IN WHICH INSTRUCTIONAL SYSTEMS WILL BE USED--413

Objective:	Identify educational specifications for rural school buildings that enhance use of instructional systems.
Plans:	December 1, 1968 to November 30, 1969
Stage 1 PLANNING 12/1/68-2/28/69	Review literature. Identify a coordinator, an architect, an instructional systems expert and State Department of Education representatives to function as development team.
Stage 2 SITE IDENTIFICATION 3/1/69-6/30/69	Identify a building needing extensive renovation and another needing replacement. Administrators, teachers, boards and community leaders reach agreements on elements of facilities necessary for effective use of systems. Formulate renovation and new construction plans.
Stage 3 SPEC/PLANT DESIGN 6/30/69-11/30/69	Prepare document describing procedures for formulation of building specifications for use of instructional systems. Implement building construction in cooperation with local districts and state authorities.

TRAIN TEACHERS TO PREPARE SELF-INSTRUCTIONAL MATERIALS--414

Objective:	Develop and test inservice training materials preparing teachers to construct supplementary subsystems which will enrich instructional systems.
Plans:	December 1, 1968 to November 30, 1969
Stage 1 CONCEPTUALIZATION 12/1/68-1/31/69	Confer with teachers who have used instructional systems to identify potentials for extending systems.
Stage 2 SET PRIORITIES February 1969	Laboratory staff and authors of systems screen ideas and establish priorities for further development.
Stage 3 PROTOTYPE DEVELOPMENT 3/1/69-8/31/69	Teachers and Laboratory staff design additional prototype subsystems and design evaluation procedures.
Stage 4 PILOT TEST 9/1/69-11/30/69	Pilot test subsystems.
Stage 5 EVALUATION AND REDESIGN 9/1/69-12/31/69	Analyze test data. Redesign subsystems.

Stage 6 FIELD TEST 9/1/69 and continuing	Teacher-designers field test prototype and collect evaluative data.
Stage 7 FUSION 3/1/70-1975	Fuse subsystems into system.

INSTRUCTIONAL SYSTEM
TRIAL - ADAPTATION - ADOPTION MODEL DEVELOPMENT--415

Objective:	To develop a model for creating a rural community environment receptive to utilization of self-instructional systems.
Plans:	December 1, 1968 to March 30, 1969
Stage 1 PLANNING AND SITE/ PERSONNEL IDENTIFICATION 12/1/68-2/28/69	Consult with rural sociologists and change agent specialists to formulate dissemination plans.
Stage 2 MODEL DESIGN 3/1/69-6/30/69	Identify typical communities as laboratories for model development. Design adoption models in cooperation with local business, industry and cultural representatives.
Stage 3 FIELD TESTING 6/30/69-11/30/69	Field test models in communities not serving as model development laboratories. Collect test data.
Stage 4 ANALYSIS AND REPORTING	Analysis of field test results. Prepare document describing effective models and factors affecting operation of models. Design plans for wider dissemination.
Stage 5 DISSEMINATION 4/1/70 and continuing	With other agencies arrange for use of models in other communities.

COMPUTER ASSISTED INSTRUCTION--420

Objective:	Develop and demonstrate computer assisted instruction in vocational mathematics and reading.
Progress:	September 1, 1967 to November 30, 1968
Stage 1 INSTALLATION 12/1/67-3/1/68	Twenty vocational mathematics units stored in computer. Study terminals installed at Anatone, Washington and Cascade, Idaho.
Stage 2 FIELD TRIALS 3/2/68-5/30/68	Orientation workshops for teachers. Pupils pretested. Terminals used experimentally. Pupils posttested. Some computer program difficulties diagnosed and corrected.
Stage 3 EVALUATION 6/1/68-9/30/68	Analyzed pretest and posttest data on cognitive results and on pupil and teacher attitudes toward computer instruction. Redesigned units.
Stage 4 EXTENDED FIELD TESTING 10/1/68-11/30/68	Redesigned units stored on IBM Model 360/67 and tested. Modified units to speed feedback and provide better pupil progress data.
Plans:	December 1, 1968 to November 30, 1969
Stage 1 PLANNING AND FIELD TESTING 12/1/68-3/1/69	Continue testing and evaluation as part of Component 410. Design remedial and enrichment arithmetic and reading units for upper elementary and high school grades. Design computer literacy units for rural schools planned. Field test prototypes.

Stage 2 ASSESSMENT AND REDESIGN 3/2/69-5/31/69	Analyze field test data in terms of pupil learning, costs, technical feasibility and staff roles. Redesign units.
Stage 3 DEMONSTRATION 3/2/69-5/31/69	Demonstrate units at three additional sites.
Stage 4 DESIGN 6/1/69-8/31/69	Produce remedial and enrichment units designed in Stage 1.
Stage 5 FIELD TEST 9/1/69-11/30/69	Field test new units with elementary students using remote, multiple-user time-share terminals.
Projected Stages REDESIGN AND DEMONSTRATE 1/1/69 and continuing	Redesign, demonstrate and disseminate. Redesign, demonstrate and arrange for regional dissemination.

GUIDANCE AND COUNSELING DEMONSTRATION--430

Objective:	Develop and demonstrate a computer based model for a guidance and counseling program for pupils (grades one to twelve) in isolated rural schools.
Progress:	December 1, 1967 to November 30, 1968
Stage 1 DESIGN OF PROGRAM 12/1/67-2/29/68	Prepared printed materials, tapes and films presenting educational and occupational alternatives.
Stage 2 EXPERIMENTATION AND EVALUATION 3/1/68-6/1/68	Conducted teacher orientation workshops. Used materials experimentally in grades one through twelve.
Stage 3 REDESIGN AND DEMONSTRATION 6/1/68-11/30/68	Revised materials with local and state funds. Planned regional demonstration with five State Departments of Education.
Plans:	December 1, 1968 to November 30, 1969
Stage 1 ADAPTATION 12/1/68-4/30/69	Adapt the computer program developed by Palo Alto Computer Assisted Guidance Project to a General Electric time-share system.

Stage 2 DEFINE TESTING PROGRAM 12/1/68-3/30/69	Design a grade one to twelve testing program for small rural schools including measures of ability, achievement, aptitude and interest measures.
Stage 3 ADAPTATION OF TESTS TO COMPUTER PROGRAM 4/1/69-5/30/69	Begin adaptation of ability and interest tests for use by the General Electric time-share Computer Assisted Counseling program.
Stage 4 FIELD TEST 6/1/69-8/31/69	Field test in school districts already utilizing computer technology for administrative and attendance purposes.
Stage 5 EVALUATION OF FIELD TEST 9/1/69-10/30/69	Redesign programs. Document procedures for use at other demonstration sites.
Stage 6 VOCATIONAL INFORMATION EXPLORATION	Analyze vocational research reports for data indicating procedures or materials that can improve system.

SELF-INSTRUCTIONAL SYSTEMS FOR ELEMENTARY SCHOOL PUPILS--480

Objective:	Adapt, field test and demonstrate multimedia instructional systems in science and mathematics for use in isolated rural elementary schools.
Stage 1 IDENTIFICATION OF SUBSYSTEMS 12/1/67-6/30/68	Assessed: Pittsburgh IPI for mathematics and reading Wisconsin Patterns in Arithmetic Responsive Environment Corporation materials Subsystems produced by Vocational Research and Title III projects Telecommunication studies Converted Wisconsin Patterns in Arithmetic for use in rural schools
Stage 2 PILOT TESTING AND EVALUATION 7/1/68-11/30/68	Pilot tested Wisconsin Patterns in Arithmetic. Evaluate results as partial basis for development of additional systems.
Plans:	December 1, 1968 to November 30, 1969
Stage 1 PLANNING AND DESIGN 12/1/68-3/31/69	Continue adoption and production of mathematics and science subsystems for grades one through six. Design evaluation procedures.
Stage 2 PILOT TEST 4/1/69-6/30/69	Pilot test new arithmetic subsystems.

Stage 3 EVALUATION AND REDESIGN 5/1/69-8/31/69	Evaluate test results and redesign arithmetic subsystems.
Stage 4 FIELD TESTING 9/1/69-11/30/69	Field test subsystems at sites in Alaska, Montana, Oregon, Idaho and Washington.

PART V

SPECIAL PROJECTS

SPECIAL PROJECTS

A Project Specialist is responsible for planning projects and activities not included in the Laboratory's basic program. Teams of Laboratory staff members participate in planning. For administration each special project is assigned to the appropriate division.

Currently there are three special projects being implemented at the Laboratory.

> REACT (Relevant Educational Applications of Computer Technology). Assigned to the Computer Division.
>
> IPI (Individually Prescribed Instruction). Assigned to the Development Division.
>
> INFORMATION FOR URBAN EDUCATIONAL PLANNING. In planning stage. Assigned to Deputy Director.

Detailed descriptions and plans follow.

RELEVANT EDUCATIONAL APPLICATIONS OF COMPUTER TECHNOLOGY (REACT)

RATIONALE

The Northwest Regional Educational Laboratory is organized to bring technological developments into general educational practice. The general use of computer technology is increasing as the machines and their applications increase in power, sophistication and flexibility. Four basic reasons for encouraging computer activities are:

> Information technology and computers have a substantial and increasing effect on society and are therefore a legitimate subject of study.
>
> Computers create a greater effectiveness and efficiency in educational decision making for both the instructional and administrative management activities.
>
> Knowledge of and ability to use a computer, with the associated information processing skills, will benefit students in their future careers.
>
> Computers offer new, more flexible multimedia approaches to instruction with faster dissemination of selected new curricular approaches.

RESEARCH BASE

Operating under the Elementary and Secondary Education Act of 1965 and the National Defense Education Act of 1958, the United States Office of Education has funded approximately 172 projects relating to education and computer technology. Nearly $23,500,000 are invested in these activities. The findings of these studies are one source of research support.

A great number of education and computer related projects are funded through other federal government manpower and training functions. An analysis of projects listed in monthly bulletins of the United States Government Research and Development Reports index provides an additional research base.

Private industry has recognized the need and potential of computer technology in education. The research reports of General Learning Corporation, Westinghouse Educational Corporation, Educational Systems Division of Radio Corporation of America, International Business Machines Corporation and Science Research Associates provide a third research base.

Analysis of reports from the three above mentioned sources provides the basis for projecting future trends in the interaction of computers and education.

OBJECTIVES

To provide students in grades one to fourteen with experience, knowledge and understanding of the uses of computers.

To provide professional educators, teachers and administrators with experience, knowledge and understanding of the instruction, instructional-management and administrative-management uses of computers.

To provide for the effective incorporation of appropriate computer technology uses in the curriculum.

EXPECTED OUTCOMES

REACT will develop computer literacy on the part of students, teachers and administrators. The introduction of computer technology in educational programs will focus on interaction of students, professional educators and computing machines. Understanding and support will be developed in five groups:

1. School administrators
2. School board members
3. Teachers
4. Students
5. Parents

LONG-RANGE PLAN

The Northwest Regional Educational Laboratory will function as both broker and developer. As a broker, the Laboratory will field test in local schools practices and programs developed elsewhere. Such testing will focus on the cost and feasibility of the computer software and hardware as well as the educational effectiveness. As a developer, the Laboratory will develop educational tools and programs for use in local school systems. Defined Laboratory objectives will limit the Laboratory to functions of developing and demonstrating.

Program objectives will be pursued by development of the following five components.

Curriculum Development Aids

Design and development of units of instruction that increase student (and staff) knowledge about computers, their history, potentials as information processors and social impact.

Problem Solving Systems

Design and development of self-instructional systems that prepare students and educators to use computer based problem solving techniques. The identification of appropriately graded curriculum entry points for the application of these systems.

Computer Aided Instructional Management

The definition and design of computer stored data files that, when related with the feedback mechanisms and data collection techniques, allow a systematic match of students with curriculum modules.

Computer Aided Administrative Management

The school principalship is the focus of attention for this program component. It has two elements:

a. A data file system organized to function as a "flexibility file" which will allow the administrator to make appropriate use of the flexible elements in the school and its educational program. The adjustments possible at points of flexibility are needed for a more complete individualization of instruction.

b. Applications of data processing techniques to the administrative problems of school cash accounting, school cash flow control and school administrative record keeping.

Simulation Studies

Instruction regarding uses of computer simulation. The focus of this activity is on aid to school level decision making and on determination of the operational feasibility of computer simulation as an instructional tool.

ASSESSMENT AND EVALUATION

Assessment and evaluation procedures are described in terms of work schedules for each component presented below. For each component, the develop-evaluate-revise cycles and procedures for redevelopment assure continued evaluation.

Definitions

"Instruction"--The interaction of teachers with students in planned educational experiences. The purpose of the interaction is to equip the student with knowledge, attitudes and behavior patterns that will increase his sense of personal worth, personal satisfaction and his contribution to society.

"Instructional management"--The processes of teacher decision making that seek to match student characteristics and achievement with curriculum materials and experiences. The purpose of the matching is to maximize the individualization and effectiveness of instruction.

"Administrative management"--The processes of administrative decision making that seek to match the characteristics of teacher-student-machine interactions with the available time, space and resources. The aim of this matching is to maximize the individualization of instruction.

1968-69 WORK PLANS

Clusters of educational institutions will be selected for introduction to the educational computer technology units developed and tested by the Laboratory. These clusters will include school district(s) willing to introduce all the components of the computer literacy program. Also included in the clusters will be vocational-technical institutions, universities and teacher training colleges that enroll local graduates. State Departments of Education representatives will be involved as observers and evaluators. Selected representatives from installation sites will serve as advisors and observers.

The first cluster, in the Portland, Oregon area, will include the following institutions: Portland Public Schools, Portland State College, Portland Community College, University of Portland, Lewis and Clark College, Multnomah County Intermediate Education District, suburban school districts surrounding Portland, and Oregon State Department of Education.

REACT components will be implemented in fiscal year 1969. Planning is documented in a Northwest Regional Educational Laboratory study entitled REACT. REACT components have been designed as legitimate Laboratory functions. If funds are available for the Laboratory to install its own computer configuration during fiscal year 1970, REACT components can soon contribute to the effective use of that system. If the Laboratory is required to defer installation of its own computer configuration, these activities will still be productive.

Schedules for 1968-69 work in each of the five program components follow.

CURRICULUM DEVELOPMENT AIDS

Objective:	To increase student and teacher knowledge about computers and their social impact.
Stage 1 PLANNING 12/1/67-3/1/69	A group of Portland, Oregon/Vancouver, Washington educators will be selected from nominations presented by the participating school districts representatives to the Program Steering Committee. The group will meet with Laboratory staff to plan units of instruction and resource units in presenting the history, theory and social impact of computers.
Stage 2 UNIT DEVELOPMENT 3/1/68-6/1/69	A design team of two people from each participating school district will meet in two-day sessions to develop behavioral goals, resource units, instructional guides and teacher inservice programs.
Stage 3 EXPERT EVALUATIONS 6/1/68-7/1/69	The design team will present its products to a panel of nationally known experts for critique and suggestions. Experts will be asked to assist in the preparation of an evaluation design.
Stage 4 REVISIONS BASED ON CRITIQUE 7/1/68-8/1/69	The team will revise, expand or shorten the instruction guide and resource units in terms of the critique as these have been accepted by the development team.
Stage 5 FIELD TEST SELECTION 8/1/68-9/1/69	Administrators from participating school districts will be asked to work with the design team and Laboratory staff to identify field test sites in terms of schools, courses in which units will be listed and teachers to be involved.

Stage 6
INSERVICE
9/1/68-12/1/69

Identified presenting teachers, design team and Laboratory staff will conduct and/or participate in inservice programs.

Stage 7
FIELD TEST BEGINS
12/1/69

PROBLEM SOLVING SYSTEMS

Objective: To develop problem solving ability when using computer technology.

Stage 1
PLANNING
12/1/67-2/1/69

A group of metropolitan Portland, Oregon/Vancouver, Washington secondary school oriented educators will be selected from nominations presented to the Program Steering Committee by participating school district representatives. The group will meet with Laboratory staff and consultants to select appropriate age, grade and curriculum entry points for computer problem solving. The group also will design self-teaching materials that will assist students to develop computer skills for problem solving.

Stage 2
DEVELOPMENT
2/1/68-8/1/69

A development team of two people from each participating school district will meet with Laboratory staff and consultants to

(1) Define and illustrate curriculum entry points by developing sample applications

(2) Develop self-instructional materials to be used by students at the age/curriculum entry points that will prepare students for these kinds of computer usage

(1) and (2) above will be developed by separate but related subcommittees. The combined groups will develop the evaluation design.

Stage 3
FIELD TEST
8/1/68-12/1/69

Field testing of the self-instructional systems and evaluation of the effectiveness of demonstrations will be conducted by the members of the development teams.

Stage 4
EFFECTIVENESS
ASSESSMENT
12/1/69

The next phase (first for the following year) will be the implementation of the effectiveness assessment design.

INSTRUCTIONAL MANAGEMENT

Objective:	Develop computer feedback systems containing student records and curricula for use by teachers designing educational experiences for elementary school students.
Stage 1 BACKGROUND PLANNING 9/1/66-11/30/68	A team of Portland, Oregon teachers and administrators began development of two information systems for use by teachers in projecting educational experiences for elementary school youth. One system was designed to provide data about students' background experiences and achievement. The other system was designed to give teachers access to curriculum guides.
Stage 2 DEVELOPMENT 12/1/68-2/1/69	Laboratory personnel and systems analysts will work with school personnel to write student record information and curriculum materials into computer language for storage and retrieval. Evaluation methodology will be evolved and tested.
Stage 3 FIELD TESTS 2/2/69-11/30/69	Field tests will be conducted in schools to determine the effectiveness and feasibility of the computer feedback systems. Special attention will be given to a study of how and why teachers do or do not use the systems. Teachers will have access to the computer through teletypewriter terminals and through use of visual displays.
Stage 4 REDESIGN SYSTEMS 12/1/69 and continuing	On the basis of data obtained from field tests, the systems will be redesigned after December 1, 1969.

ADMINISTRATIVE MANAGEMENT

Objective:

The development of school administration computer usage with information retrieval systems that assist in decision making.

Stage 1
PLANNING
12/1/68-4/1/69

The computer programming system for information storage and retrieval developed for the instructional management activity will be applied to school administrative problems. A group of administrators nominated by the participating school district representatives to the Program Steering Committee, working with Laboratory staff and consultants, will define information to be contained in files on

Staff personnel

Facility characteristics

Time modules

School cash accounts

Instructional material center records

Stage 2
DEVELOPMENT
4/1/69-7/1/69

Input and output forms will be established for each kind of entry to the information files. Points of data collection and report usage will be identified. Evaluation methodology will be defined and developed.

Stage 3
COMPUTER
CODING
7/1/69-11/1/69

Data file parameters and input/output forms will be coded and entered in the system. Sample data will be collected, organized and prepared for entry into the system.

Stage 4
DEBUGGING
11/1/69 and
continuing

Input/output systems will be evaluated and revised through use of test data. Design of inservice programs to present the systems to other admininistrators will begin.

SIMULATION STUDIES

Objective:	To use computer simulation as an aid to administrative decision making in a threat-free environment.
Stage 1 PLANNING 12/1/68-2/1/69	Problems in school scheduling, building design, professional staffing and financing of schools will be identified and defined by the Program Steering Committee.
Stage 2 DEVELOPMENT 2/1/69-4/1/69	Search of simulation programs will be made by Laboratory staff and consultants. A selection will be made of the most effective and efficient simulation vehicle.
Stage 3 IMPLEMENTATION 4/1/69-11/30/69	Parameter definitions to match the simulation vehicle with the problems will be developed. Test data will be collected and computer simulation of the defined problems will be developed. Redefinition of decision problems will be developed to test parameter variability and redefinition.

CHART XXXIII

SIMULATION STUDIES

Long-Range Goal--Use of Computer Simulation In Educational Decision Making

	1968	1969	1970	1971	1972	1973
Outputs	N/A	Adapt and design, develop school simulation	Field test and revise simulation program	Operate simulation programs		
Type of Activity		Developmental	Development Evaluate	Evaluate Disseminate		

CHART XXXIV

CURRICULUM ADAPTATION

Long-Range Goal--Increase in Student/Educator Knowledge About Computers

	1968	1969	1970	1971	1972	1973
Outputs	N/A	Units of instruction for social studies classes	Field test and revise units of instruction Vocational education courses in data processing	Operation of social studies units of instruction Field testing and revision of vocational education courses	Operation of vocational education courses Units of instruction in teacher education	Field test and revise units of instruction in teacher education
Type of Activity		Development	Development Evaluation	Dissemination Development Evaluation	Dissemination Development Evaluation	Dissemination Development Evaluation

CHART XXXV

ADMINISTRATIVE MANAGEMENT

Long-Range Goal--Educational Administration Usage of Computer Information Retrieval on Analysis Systems

	1968	1969	1970	1971	1972	1973
Outputs	N/A	Design of computer information retrieval and analysis to assist in administrative decision making	Field test and redesign of computer information retrieval and analysis to assist in administrative decision making	Analyze and expand computer information retrieval and analysis to assist in administrative decision making	Disseminate and develop expansion of computer information and analysis to assist in administrative decision making Combine with instructional management systems	Expand developments, computer information retrieval and analysis to assist in administrative decision making
Type of Activity		Develop Interpretative reports	Develop Evaluate Interpretative reports	Develop Evaluate Interpretative reports	Develop Evaluate Interpretative reports	Develop Evaluate Interpretative reports

CHART XXXVI

INSTRUCTIONAL MANAGEMENT

Long-Range Goal--Use of Computer Assistance in Matching Student and Educational Experiences

	1968	1969	1970	1971	1972	1973
Outputs	N/A	Preliminary design and field testing of information systems	Revision and field testing of information systems	Operation of student curriculum and information systems	Operation and expansion of student, curriculum information Combination with administrative management systems	Operation and expansion of student, curriculum information Combination with administrative management systems
Type of Activity		Development Evaluation Interpretative reports	Development Evaluation Interpretative reports	Dissemination Evaluation Interpretative reports	Dissemination Development Evaluation Interpretative reports	Dissemination Development Evaluation Interpretative reports

CHART XXXVII

PROBLEM SOLVING SYSTEMS

Long-Range Goal--Use of Computers in Problem Solving

	1968	1969	1970	1971	1972	1973
Outputs	N/A	Illustrative problem solving in curriculum areas Self-teaching systems for computer use	Field test and revise Illustrative problem solving in curriculum areas Self-teaching systems for computer use	Operate and expand curriculum areas of application	Field test and revise expanded curriculum areas Combine with curriculum adaptation	Field test and revise expanded curriculum areas Combine with curriculum adaptation
Type of Activity		Development Evaluation	Development Evaluation	Development Dissemination Revision	Development Dissemination Revision	Development Dissemination Revision

INSTALLATION AND FIELD TESTING OF INDIVIDUALLY PRESCRIBED INSTRUCTION--MATHEMATICS

BACKGROUND

Individually Prescribed Instruction in mathematics is being developed and tested by the University of Pittsburgh Research and Development Center and Research for Better Schools. It has been acknowledged as one of the most promising educational developments today.

OBJECTIVE

The Laboratory will coordinate and monitor the national 1968-69 field testing of Individually Prescribed Instruction (IPI) mathematics in five selected Northwest elementary schools.

1968-69 WORK PLANS

Stage 1 PLANNING AND STAFFING 2/1/68-3/30/68	Twenty-two persons representing 11 school districts and three State Departments of Education attended an informational meeting where the IPI mathematics program and participation requirements were explored with representatives of RBS. An IPI Coordinator was employed by NWREL.
Stage 2 SITE SELECTION 4/1/68-4/30/68	Applications from interested schools were received and jointly reviewed by NWREL and RBS. Five Northwest schools were selected as IPI mathematics field test sites for the 1968-69 school year. Seattle, Washington Hagerman, Idaho Havre, Montana

Beaverton, Oregon

Corvallis, Oregon

Stage 3 ADMINISTRATOR TRAINING 5/1/68-5/30/68	The NWREL Coordinator and an administrator from each of the five selected schools attended a three-week internship training program conducted by RBS in Pennsylvania and Delaware. Plans for implementation, teacher training, and material orders were cooperatively developed.
Stage 4 TEACHER RETRAINING 6/1/68-8/30/68	Teacher retraining workshops were conducted by the administrator and Laboratory Coordinator in each of the five schools.
Stage 5 IMPLEMENTATION 9/1/68-11/30/68	The program was installed in each of the five schools and initial data collection began.
Plans:	December 1, 1968 to June 30, 1969
Stage 6 COORDINATION AND MONITORING 9/1/68-6/30/69	The NWREL Coordinator will visit schools on a regular basis, participate in staff sessions, supervise data collection functions and analysis, serve as a consultant to the administrator, and serve as liaison between the school and RBS.

INFORMATION FOR URBAN EDUCATIONAL PLANNING

RATIONALE

Population and economic growth forecasts indicate accelerated urbanization in the Northwest, particularly in the Oregon and Washington areas. Already, expanding metropolitan communities are confronted with novel educational needs, potentials and problems. The processes by which both needs and problems can be met are being influenced by major changes in the nature of industry and commerce, municipal boundaries, local and county government structures, tax bases, socioeconomic characteristics of populations, and the enlarged aspirations of many citizens. The adequacy of education is also increasingly influenced by the decisions of regional, state and local planning agencies which utilize new techniques to perform new functions.

To provide for adequate consideration of educational matters it is urgent that local, county and state school boards be prepared to (1) participate in the deliberations of public planning agencies and (2) to provide planning agencies with facts they need for adequate consideration of educational needs and potentials.

It is particularly urgent that educators develop effective means of working with the new Regional Association of Governments being organized in response to the Cities Improvement Act of 1966.

RESEARCH AND EXPERIENCE BASE

Literally hundreds of recent studies point to new educational needs, problems and potentials inherent in urbanization.

The program's long-range objective is to help school board members and school administrators establish constructive working relationships with local, state and regional planning agencies and to develop a system for providing planning agencies with information essential for effective educational planning and management.

The Twentieth Century Fund, the American Management Association and the Institute for Public Administration have assembled facts clarifying needs for modernization of planning and management techniques. The Massachusetts Institute of Technology and Harvard University Joint Center for Urban Studies, the Council of State Governments and the Portland State College Urban Studies Center are among groups pioneering design of systems of information essential for effective planning and management.

Massive bodies of research demonstrate that pupils' educational needs are influenced by their housing, neighborhood environment, health, recreation, and family income.

PROCEDURE

A Steering Committee has explored needs and procedures guiding plans for next steps of work. The Committee is composed of the state school superintendents of Washington and Oregon, school superintendents of Seattle and Portland and a university professor.

LONG-RANGE PLAN

Phase 1. Conceptualize Information System
1/68 - 11/68

Educators, urban management specialists and representatives of U. S. Department of Housing and Urban Development conferred to explore need for system and feasibility of development

Educators conferred with representatives of housing, health, recreation, and welfare agencies to identify categories of information necessary for interrelated planning and management, to identify specific planning and management goals to be pursued and formulate criteria for system use.

Representatives of the following agencies participated:

American Association of School Administrators

National School Public Relations Association

U. S. Department of Housing and Urban Development

Urban Studies Center, Portland State College

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Washington State Office of Public Instruction

Oregon State Department of Education

Washington (State) Association of School Administrators

Oregon (State) Association of School Administrators

Washington Education Association

Oregon Education Association

Phase 2. Develop Prototype System
12/68 - 11/69

Identify facts available from existing sources--census, health and welfare agencies, state officials, etc.

Confer with agencies to get access to facts by processes congruent with legal restrictions and respect for privacy of individuals

Program facts for computer storage and retrieval

Design evaluation procedures

Phase 3. Pilot Test Prototype
10/69 - 11/71

Put system on line in Seattle and Portland

Test and evaluate system in terms of its capability to furnish facts necessary for:

Reports to planning agencies

Reports to agencies operating housing, health, welfare and recreation programs

Planning and management of instructional and counseling services and physical facilities

Influencing planning agency actions

Generating planning agency recommendations supporting adequate educational developments

Phase 4. Redesign a Model System on Basis of Pilot Test Results
12/71 - 11/73

Phase 5. Adapt, Demonstrate and Report
12/73 - 11/75

Demonstrate adaptions of model in three additional metropolitan areas.

Prepare report describing interagency relationships, procedures and cautions involved in responsible use of system

ACCOMPLISHMENTS

With help of consultants we have (1) identified local, state and regional agencies responsible for educationally related planning (2) identified some major types of information essential for effective educational planning and management, and (3) made arrangements with the Washington State Department of Public Instruction for cooperative development of a prototype system for providing such information.

We will identify types of information school systems and planning agencies need for educational planning and for management.

PLANS FOR 1968-69

In cooperation with the Regional Office of Housing and Urban Development, Regional Associations of local governments, state and local planning agencies and industry:

> Formulate structures of educational and socioeconomic information educational and planning agencies need for educational planning and decision making. Some examples of information to be systematized on regional, local and neighborhood bases are school-age population projections, school land needs, socioeconomic and racial characteristics of populations, educational levels of populations, income, recreational facilities, welfare service loads, pupil achievements, dropout rates, delinquency, crime,

substandard housing, disease rates, occupational patterns, unemployment.

Identify existing sources from which portions of such information can best be obtained--census, municipal records, county records, welfare agencies.

Explore sources and procedures for obtaining information not presently available.

Explore procedures by which such information can be computer-processed to make it readily accessible in forms useful for management and planning.

PLANNING 9/1/68-11/30/68	(1) Define basic educational planning objectives and concepts, (2) determine kinds of information most essential for adequate planning. This will be done in cooperation with industry, housing, public welfare and health agencies and State Departments of Education. Consultants (school administrators, board members, political scientists, social psychologists, economists and representatives of planning agencies) will assist with this basic work.
IDENTIFY INFORMATION COMPONENTS 12/1/68-1/30/70	Identify sources from which information can be obtained and initiate arrangements for obtaining it. Consultants will assist with this work.
INFORMATION SYSTEM DESIGN 2/1/69-4/30/69	With information science consultants design prototype computerized system for collection, storage and retrieval of information in useful forms. Check design with planning agencies and school administrators. Information science consultants will assist with this work.
INITIATE EXPERIMENTAL USE OF SYSTEM 5/1/69-8/31/69	Put system on computer line in at least two states (Oregon and Washington).

EVALUATION 8/1/69-11/31/69	**Evaluate usefulness of system in cooperation with school administrators and representatives of planning agencies. Identify desirable modifications of system.**